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Yachting

The Motor Boat Show

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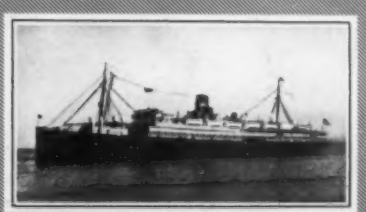

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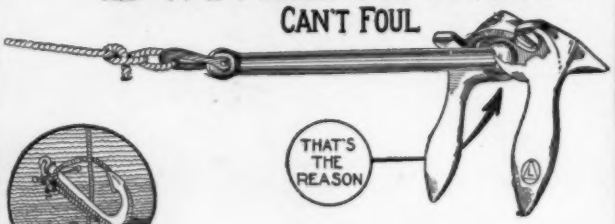

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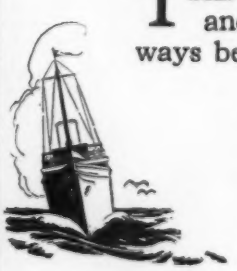

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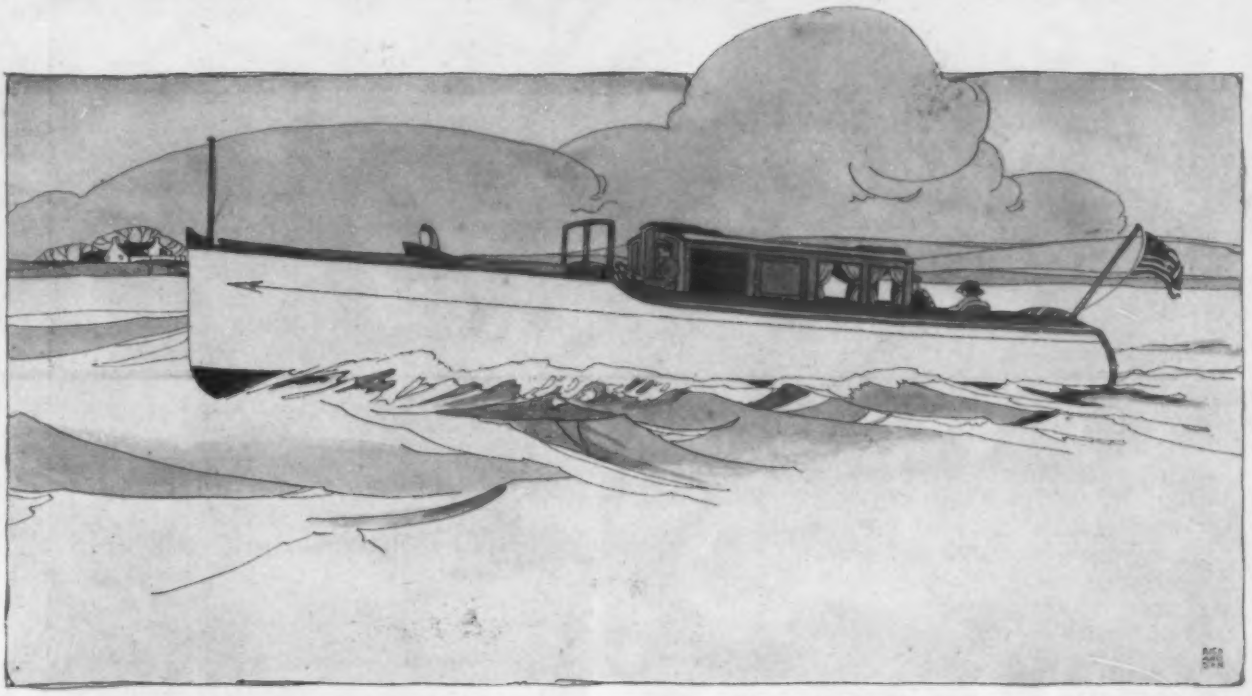
The Seventeenth Annual New York Motor Boat Show



Refinement and distinctiveness mark the boats at the Show this year, with special attention paid to the needs of the service for which they were designed

WHEN the curtain rings up at the Grand Central Palace on the afternoon of February 17th for the 17th Annual Motor Boat Show it will mark the official opening of the boating season of 1922. Never mind if the snow is still on the ground; the time has arrived to make definite plans for the summer's cruising or racing and to place the order for your new boat or for overhauling or refitting the craft you sailed last year.

Looking back over the last year it seems as if no equal period in the history of the boat and engine industry, except possibly the very early years, shows as great an advance in design and construction as the last twelve months. This is true both of boats and engines. In the former, the demand for increased speed has produced not only a stronger and more seaworthy type of hull for the purpose, but also more highly-developed engines. Only a few years ago a sustained speed of more than 1,000 revolutions per minute almost always spelled trouble, yet that speed is now considered low for a high-speed engine, and 1,500 to 1,800 revolutions are maintained easily for long stretches. The last three Fisher Trophy races emphasized this fact. This increase in engine speed has resulted in the production of a lighter and better suited motor for fast-boats, so that it is possible to install as much as 400 horse-power in a 50- or 60-foot express cruiser at the present time without sacrificing *all* of the boat to the power plant, while if one is willing to pay the fuel bills there is no reasonable limit to the speed he can obtain in moderate sized craft.

In boat accessories and equipment the Show will be found quite as interesting as the boats themselves, and many new articles and novelties will be seen. Wireless telephone systems, electric lighting outfits and ignition systems have been developed especially for boat use, which add to the comfort and convenience afloat, while the galley equipment shows a marked advance in the many new cooking appliances.

Before turning to the list of exhibits this year, which will be found on pages 85 to 102, let us say a word of advice on the necessity of making up your mind as to what you want and *ordering early*. Don't get the idea that you can see what you want at the Show and postpone ordering till the boating season is at hand. If you do, it's good dollars to German marks that you get left. Give the builder, either of engine or boat, plenty of time to do his work properly, and don't hurry him at the last minute when he is rushed to death and everybody wants his boat at the same time the other fellow does. If you follow this advice you'll be happy in the end.

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"You have heard the call of the off-shore wind
And the voice of the deep-sea rain;
You have heard the song. How long—how long?
Pull out on the trail again." —KIPLING.

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YACHTING

VOLUME XXXI
NUMBER II

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Conning the ship from the bowsprit end

Looking forward on *Tahitian Maiden* from quarter-deck

Logging ten knots in the Southeast Trades

A South Sea Voyage Under Sail and Power

By CHARLES C. CURTIS

WE arrived in Colon, Panama, in mid-summer, from a South American port, with a very firm determination of going from there direct to Tahiti; and but for this determination and the perversity borne of it I very much doubt if we would ever have carried out our plan. Certainly the prospects did not look encouraging when we first began to make inquiries at the various shipping offices in the Canal Zone.

We knew before we started that there were no regular passenger lines running between this part of the world and the South Seas, but it seemed likely that from such a central port as Cristobal we would not have to wait very long before finding a tramp steamer or some other type of cargo vessel leaving for Tahiti, especially since this island is not far from the direct line between Panama and Australia. We could not, however, find a single shipping agent who deigned to agree with this theory. Those who had ever heard of Tahiti gave the impression that the departure of a vessel from the Canal for that island was the event of a lifetime and that if a freighter did happen to be going that way within the next year she would surely refuse to carry two passengers. What did we want to go to Tahiti for, anyhow? they asked. The fact that we were both on the point of realizing life-long ambitions to visit the South Sea Islands left most of them quite cold, and they invariably ended by trying to send us to San Francisco, either directly up the Pacific coast, a trip taking almost a month on the slow steamers in that service, or via New Orleans, at an expense of time and money most unpleasant to contemplate.

Finally, when we had been in Colon almost a week, we were awakened early one morning by the telephone bell and discovered that we were being called by a steamship agent, to whom we have grown to feel we are under a lifelong obligation. He had, like all the others, taken our names and promised to notify us if he heard of a ship of any description about to leave for Tahiti. Evidently he was a man of his word, for he was telephoning to tell us that he had just learned of a three-masted schooner expected any day from New York, on the way to the Society Islands. Furthermore, he gave us the name of her agents in Colon, a firm not primarily in the shipping business and one which we had not previously visited. We called on this company, had the news confirmed, and were encouraged by the agent's belief that the captain would probably consent to take two young men along as passengers. We must have looked like a couple of dead beats, for he strongly emphasized the words "as passengers," and apparently thought it quite impossible that we should be either willing to pay our way or able to work it.

By this time we were at a high pitch of excitement, as our wildest hopes had been that we might stumble across a sailing-vessel to take us on our way. But we had to curb our impatience, as the date set for the arrival of our ship was "any day now," which it continued to be for a full week. In spite of living at a hotel amid every physical comfort, we were growing pretty impatient—the more so, probably, because we had no way of knowing just how long we would have to wait. Consequently, there was great excitement when, as we sat one evening on the hotel veranda

—KIPLING.

Pull out on the trail again.

And the voice of the deep-sea rain;

gazing out to sea, there appeared in the sunset a three-masted schooner under full sail. I believe we both fell in love with her at that first glimpse, and I know we hoped that she would prove to be our ship. We feverishly watched her sail into the harbor, and shortly after she had dropped anchor we made a flying trip to the Captain of the Port's office. There, to our breathless inquiries as to her identity and destination, we received the cheering reply: "Auxiliary Schooner *Tahitian Maiden*, from New York, bound for Tahiti." By a supreme effort of will-power, we managed to keep ourselves from galloping up Front Street and shouting the good news to the wide world.

The next step, of course, was to find out whether her captain would consent to take us. Early the following morning we journeyed to the Cristobal oiling station, where the schooner had gone to replenish the supply of crude oil for her auxiliaries. On close inspection, and in comparison with the big vessels around the harbor, she looked tiny for a trip of some 4,000 miles, but there was a staunchness and fitness in her appearance that filled one with confidence.

The captain seemed a promising type, but, naturally enough, he would not commit himself, when confronted by our sudden request to take passage on his vessel. He was not in the habit of carrying passengers, and I suspect he was meditating on what a nuisance two pampered landsmen might turn out to be on a long voyage in a cargo ship. He did not, however, plan to start for three or four days and we made an appointment to meet him later and get his answer. The following three days were probably the most anxious of our lives. After what seemed an eternity of waiting, we met the captain on the appointed afternoon. The *Tahitian Maiden* was to weigh anchor at six-thirty next morning and to our great joy it was agreed that we were to be among those present.

There followed a wild scramble to pack our baggage, check out of the hotel and go to the French Consulate with the captain and the agent where it was necessary to change the ship's papers, adding two more names to the bill of health. After getting our luggage safely aboard we returned to shore to enjoy a last dinner there. After saying farewell to as many as we could find of the acquaintances who had helped make our stay on the Isthmus a pleasant one we hired a motor-boat and returned to the ship in the dead of night. When we turned in we were still somewhat dazed at our luck in running into exactly the thing we had most hoped for.

We were awakened early in the morning by the noises incidental to getting under way, chief of which was that of the small motor up forward used for weighing anchor. Then, as we lazily lay in our bunks half-asleep, there came a sound which made us wonder for a moment if we had stumbled upon a berth in the engineroom by mistake; for our two Fairbanks-Morse oil engines were being started and it transpired that they were situated directly under our room. Although after a night or so aboard, I got quite accustomed to their proximity and could sleep to their hum as to a lullaby, they sounded anything but soporific during those first few minutes. On looking out of our porthole, we found that we were already slipping slowly through the harbor, and, jumping into our clothes, we arrived on deck just before the *Tahitian Maiden* entered the Canal proper.

The transit of the Canal took only about eight hours and before we realized it we were passing Balboa, the port at the southern mouth of the Canal, whence we proceeded through the harbor without stopping, dropped the pilot, and set out on the long Pacific traverse.

The following was one of the most delighful months I have known. As I think back over our voyage, it strikes me even more than it did at the time how lucky we were in securing, or rather in having thrust upon us, the fundamental comforts that were handed out us. In the first place our stateroom was such a thing as one would never dream of in connection with a 120-foot cargo schooner. At Colon the captain had told us apologetically that although there was a spare cabin aboard it had only one bed, and we would have to bunk together. We pictured the usual narrow ship's berth in the usual narrow stateroom and had visions of flipping a coin every night to see who should have the bunk and who should take the floor. Imagine, then, our suprise on finding that we had a room approximately seven by nine feet, with a large bureau and a *full-width* iron double bed!

We were in for another pleasant disappointment with respect to the food on board. I remember, during that final dinner at Colon, recalling all the unpleasant stories I had ever heard about the fare on sailing ships and thinking that I should probably look back longingly at that last shore meal, time and again. Toward the end of the voyage, it is true, I did just that; but only for the reason that food on shipboard has of necessity a sameness about it that one longs to vary. Nevertheless, what we did eat was the best of its kind. The food was not only excellent in itself but, as we had a good "Doctor," it was excellently prepared; and although it had little in common with a dinner at the Plaza or the Ritz, still for good, substantial meals, I claim that those of the *Tahitian Maiden's* cook could not be excelled. Of course the quality of the food varies greatly on different vessels, and this fact was confirmed by the statements of the officers and crew, each of whom had, of course, sailed in many ships, with many captains and cooks. My own guess on the subject was backed by their unanimous testimony that the food on our little schooner was unrivalled by that of any sailing ship in the Seven Seas.

We were lucky in that we were blessed with the physical qualifications of good sailors; otherwise we should retain, doubtless, very different impressions of the voyage, for, fine as we found it, I should hardly recommend life on a 138-ton schooner for anyone subject to seasickness. We found, what most of those who sail the South Seas have, that the name "Pacific" is somewhat misleading. During our entire 36 days at sea there never was anything less than a long rolling swell, which was always enough to give the *Tahitian Maiden* a very decided motion, and on many days we had a good-sized sea running, with waves that looked like mountains from our low decks and that knocked us around in such a way that keeping our feet was a matter of real difficulty until we got our sea legs. Few and far between were the days when we sat down to meals without racks on the table, and I finally decided that the greatest ocean in the world was christened the "Pacific" because of the infrequency of really violent storms, rather than because of its every-day, normal behavior.

Being lucky enough to remain undisturbed by these conditions, we set about enjoyng ourselves at once. In the natural course of life on the ocean, there's plenty "for to admire and for to see," and as we did not have to work and the heat of the tropics was not conducive to ambition, many a long morning I spent stretched in the sun on the forward house reading Stevenson's *The Wrecker*. Now and again the monotony would be broken by a school of porpoises playing around

Mr. Godfrey, the Mate

Part of our crew

Captain Dexter gets an altitude

the bow; a big, bulky turtle floating lazily and contentedly on the waves; the spout of a whale in the distance; or, from time to time, the long, thin, wicked-looking fin of a shark cutting the surface of the water. It is very easy to sympathize with the sentiment of Louden Don in *The Wrecker* expressed in the words: "Wherever the trade winds blow I know no better country than a schooner's deck."

We were lucky to have shipped with the kind of man our captain turned out to be. A pleasure trip in the vessel of a master like any of those hard-driving skippers introduced in *The Wrecker* wouldn't have been much pleasure. Fortunately, our captain was a very different stamp of man. No doubt this account of our voyage would be far more exciting if I could tell of an occasional sailor knocked senseless with a belaying pin, or of the crew driven day and night, underfed and badly treated, but this is only a prosaic story I have to tell. The men were well treated, given their off-watches entirely to themselves except when necessity demanded "all hands," and a condition of absolute harmony prevailed on board. Of course. in these times of seamen's protective laws, the day of the violent skipper or "bucko" mate is past; but I gathered from what I picked up from the sailors that it was still an easy matter to find the hard-driving master who hates to see his men have an extra hour of rest. finds things for them to do during all their daylight hours and feeds them poorly. But our crew were unanimous in calling Captain Dexter the fairest man they had ever sailed under. He expected and got whatever work he wanted out of his crew, but the fact that he looked out for their rights as well as his own, endeared him to every man on the ship and resulted in his getting better work from them than he could possibly have done by being a "holy terror." In addition, he was a competent sailing-master and navigator, active, alert, cautious, leaving nothing, however trivial, to chance. He was also an intelligent and interesting man, not without a good deal of shrewdness, whose naturally extensive education in the schools of experience and travel was supplemented by considerable reading.

The entire company, including the "Old Man," numbered eight, and they represented every stage of diamond, from the extreme rough to the polished article; but diamonds they were, without exception. We were sailing under the British flag, and but for one English seaman, who was himself a resident of Nova Scotia, the entire crew was Canadian born. Furthermore, they were all old friends, with the possible exception of the engineer, who was a natural-born mixer. The rest, to a man, lived in one small Nova Scotian community, and this fact had, of course, an important part in the harmony conspicuous on board. Besides the Old Man, there was the mate, Mr. Godfrey, a boatswain (we carried no second mate), an engineer, Lawson, who looked after our two auxiliary oil engines and the auxiliary engine on deck, the cook, and three seamen.

One thing that rather interested me concerning our crew was that only one of them had ever been to the South Sea Islands before and only two had sailed the Pacific previous to this trip. They were sailors through and through, who knew the sea at its worst from winter fishing on the Banks, and most of them had been all over the North and South Atlantic; but now, like ourselves, they were headed for new country and were as anxious and eager as we were to see what it would be like.

After leaving Balboa we had weeks of wide ocean with never a sail or a glimpse of land to relieve the sameness of the horizon—weeks during which it was difficult to keep track of time; monotonous, yet delighful, uneventful, yet full of interest to anyone bred on land. The weather, after the first ten days, was almost continually fine. At the start, however, it was not so good, as it was neither clear nor interesting, and to make things worse, the prevailing winds headed us most of the time so that we could not look up within several points off our course. However, we were not greatly depressed by this, as at the time we were eagerly taking in the life of a small schooner, which was then absolutely new to us, and which we found very good indeed.

Our "cabin de luxe" was, of course, in the after-house, which accommodated also the captain, the mate, the engineer and steward. The rest of the ship's company bunked and ate in the forecastle; but aside from this separation of living quarters, there were really no social barriers on board. In the after-house the limited size of the table necessitated two messes, and it was arranged that we should eat with the captain and mate, while the engineer and the steward ate at second mess. The officers, always under a considerable strain, were invariably in a good mood at meal time, and the fare was pleasantly seasoned with the dry, kindly humor of the captain, and especially with the merry wit of the mate, Mr. Godfrey, an unusually interesting character and one of the finest it has ever been my privilege to know. At an age which finds many men in an easy chair by the fireside, he cheerfully stood "watch-and-watch" in all sorts of weather; and under the most trying conditions maintained a serenity of disposition which was remarkable. He was blessed with a happy tem-

Entering the harbor of Papeete, Tahiti, under power alone

perament and a very real sense of humor—the kind of humor which, seeing a joke even when it was on himself, pulled him through any situation with a cheerful smile. He averred more than once during the trip that at heart he disliked the sea—and indeed this was his first voyage in some years, which would seem to bear out the statement. But toward the last, when the days were beginning to drag out interminably, he gave less sign than anyone else on board of being fed up with the long cruise. In addition to all this, he was a man of unusual intelligence—a thinker, a good deal of a student of human nature, and very much of a philosopher. He used to love to discuss the political or economic problems that faced the world, or the vital personal questions that confront the individual, such as whether it is a greater service to humanity to raise one child, giving it every possible advantage, or ten children with no advantages. After supper, in the dog-watches, when most of the crew sat around on deck, smoking and chatting in little groups during the traditional off-hour, it was pleasant to hear him lay down his views on some question, or listen attentively to those of others, and many were the problems of the day which we settled on the quarterdeck of the *Tahitian Maiden,* under the gorgeous brilliance of the tropic night.

Throughout our first week, when we were engaged in getting acquainted with this life, we had almost continually overcast weather, with frequent short squalls, lasting just long enough for us to climb into our oilskins. A very little of this, and we were eager for either a few fine days or something of real interest in the storm line. We got both: first, and when we had been out just a week, a squall which, although it did not last long, made things interesting for awhile. It arrived shortly after dinner on a day which, like its predecessors, had been overcast. The sea had been rising gradually all morning, when the squall, which we had seen approaching for several minutes, arrived in the form of a rapidly freshening breeze and a rain considerably heavier than the spiritless drizzle to which we had become accustomed. Within two minutes after these first signs, the heavens suddenly opened up and a terrific cloud-burst beat down upon us. I staggered back to the stern to get from there a full view of the motion of the ship, and had to smile at the appearance of the man at the wheel, with water pouring off the brim of his sou'wester, two streams running down his face, and his oil-skins glistening in the downpour.

"Something to write about," he laughed as I passed by, and, looking around me, I agreed that it was. The wind had whipped the surface of the water into a million whitecaps; the waves, despite the beating rain, had reached such a size that, even in the now heavy wind, we could make almost no headway, with our topsails clewed up as they were. The little ship plunged forward slowly, but we, standing at the stern, rode up and down at a wild rate. Facing forward, we seemed to look straight down below us into the ocean at one moment, and in the next to gaze up at the zenith right over the bow.

Up to this time the prevailing wind had compelled us to steer a general westerly course, and it was so light most of the time that we always kept one engine going. The day after we struck this heavy squall, the breeze hauled to a still less favorable quarter, blowing now squarely from the southwest, the direction we should have been sailing. In consequence we had to head still further off and pointed west by north, with our nose toward Hawaii, over 2000 miles to the north of our destination. We held this course for three days, and then, on the tenth day out, we tacked ship southeast by south, straight for the coast of Chile. At this point of the voyage the weather began to improve, and the improvement lasted steadily until we struck, a week later, the southeast trades of the South Pacific.

Twenty-four hours later we made another tack, having run into a more favorable slant, and we were now able to head southwest by south, a course we held, in general, until we hit the long-sought trades. Thus ended the most trying part of our voyage; the part when, beating against a head wind, we were running up good daily mileage, but never in the right direction. It was a small sample, enough to get just an idea of what sailing must be like when the voyage is a long one and against consistent head winds. Even during the comparatively few days that we had these conditions, we were far better off than the old-time sailing vessel, in which a considerable proportion of the world's sea trade is still carried on; for our auxiliary motors enabled us to sail closer to the wind than we could have done without them and kept us moving along when it died entirely. Sailing ships making the return trip from Tahiti to Panama at this time of year, on leaving the islands sail almost south, describe a huge semi-circle which brings them close to the western coast of South America, then skirt the Pacific coast to the Isthmus. An auxiliary three-masted schooner of average speed takes about 50 days for this run, in the June, July and August winds, although the direct distance between the two points is only about 4,400 miles. From this one can imagine what a voyage over a long distance in a schooner without auxiliary power would be like with unfavorable winds.

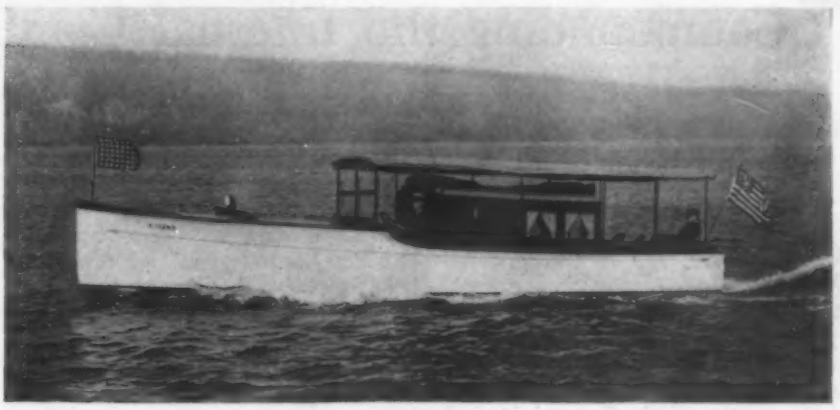
We began to see signs of the proximity of the southeast trades when still two or three days north of the Equator. One of these was a gradually increasing breeze, with an occasional strong blow which would last at the most a few hours, conspicuous but fickle outposts of the great current of air we were heading for. As additional evidence, clusters of typical trade clouds would form from time to time, white and splotchy on the horizon. The day before we crossed the Equator we had an unusual brisk wind from morning till night, and as we were still running our engines we made 210 miles during that twenty-four hours, our record daily run, and incidentally a better mileage than is achieved by many a small tramp steamer.

The following day was a remarkable one. It was rather cloudy in the middle of the morning and by noon the sky was so overcast that it was impossible for the captain to get an observation. He knew from our course, however, that we must be very close to the "line." I happened to have risen early that morning to see the sun rise, an event so unusual that the strain compelled me to go below and take a nap right after dinner. I left a rather dismal, gray day, but after an hour's sleep awakened by the brilliance of the light pouring through the portholes. On returning to deck, I was confronted by the most peaceful scene I have ever witnessed and I was really startled at the change that had taken place. There was not a single cloud of any sort in sight. Turning slowly, till my eyes had circled the entire horizon, I searched the sky for some signs of the colorless patches that had darkened the day a short hour before: all I found was a solid canopy of intense blue, unbroken as far as the eye could reach. For once the Pacific surpassed its name; there was no trace of the long combers that had rolled us incessantly till then; the sea was quite motionless except for a little ripple of the surface and the gentlest possible swell. Although the breeze was just strong enough to keep the sails filled, with this kind of a sea we sped along in great form.

These conditions lasted for hours and after dark the ocean seemed even more peaceful, with the half-moon directly overhead and a myriad of stars blazing in a cloudless sky. An hour after nightfall, though, there appeared, far to the southward, a hugh bank of misty clouds, and although the wind we were getting on the sea-level was still only a moderate one, conditions must have been very different in the altitude at which they were riding, for within five minutes after we first noticed them they were directly above us, drawing a light, flying veil over the face of the moon, obscuring it but slightly and racing across it at breakneck speed.

The clear, bright weather held all the following day and we found from our observation at noon that we had crossed the Equator the previous evening, probably a little before midnight on our seventeenth day out of Colon. Although conditions were still pleasant, they were anything but satisfactory from a practical view-point, for the wind died almost completely and the can-

(*Continued on page* 114)



Trump is a novel type of sedan runabout designed by the Consolidated Shipbuilding Corporation

The interior of the sedan cabin of *Trump* is very attractive and comfortable

Trump—A New Type 38-footer at the Show

Among the new boats to make their debut at the Show this season will be the *Trump*—a 38-foot day cruiser. Unlike the usual design of boats of this type the *Trump* was intended primarily for Southern waters. She has the roomy cockpit of a runabout for day sailing or fishing, with a comfortable sedan cabin which has sleeping accommodations for two, with toilet and galley equipment. Forward, there is a berth for a paid hand or for a local pilot or guide. The motive power consists of a six-cylinder 66 h.p. Speedway engine which will give a cruising speed of 16 miles per hour.

The Consolidated Shipbuilding Corporation was commissioned to design and build the *Trump* for Captain W. H. Wheeler, a prominent New York yachtsman, and for a number of years past a winter resident of Miami. The designers and builders have incorporated the owner's requirements in a graceful, seaworthy hull, and have given this craft a good cruising speed.

The *Trump* is built of cedar with mahogany trim, the interior and exterior joiner work also being finished in mahogany. The finish and upholstery is of the high standard that characterizes all "Consolidated" boats.

Pensacola Y. C. Election

The Annual Election of the Pensacola Yacht Club was held on December 7th, and the following officers were elected for the next year:

Commodore, Dr. Clarence E. Hutchinson; Vice-Commodore, D. H. Shepard; Rear-Commodore, Rox Cowley; Fleet-Captain, James C. Watson; Fleet-Lieutenant, Dr. S. R. M. Kennedy; Secretary-Treasurer, W. C. Frederic.

Compounding the Internal Combustion Engine

By ELMER A. SPERRY, Dr. Eng.,

Life Member American Society of Mechanical Engineers.

TO those versed in the problems of selecting and designing prime movers, the advantages of the compound combustion engine are readily apparent. It is light compared with the normal Diesel, being in special cases less than one-tenth, and in some instances less than one-twentieth, the weight for the same output. Its mechanical efficiency is extremely high, and a distinct gain in overall efficiency from fuel to shaft has been made, as well as a very definite gain in simplicity, direct performance and smoothness of the crankshaft diagram. This has been achieved while adhering to the best practice, namely, four-cycle operation.

This description of the principle of the compound Diesel engine is part of a paper read at the last meeting of the American Society of Mechanical Engineers. It presents the research by the author extending over a series of years, during which not only has the high-pressure principle been thoroughly established, but all the important requirements have been worked out, and, finally, an engine embodying practically all the advantages has been subjected to long, continuous runs.

It is the author's belief that the results here announced warrant the prediction that engines employing the multi-stage or compound principle will at no distant date occupy a dignified place in the combustion-engine art. If this principle should assume leadership, it will of course only be because of its demonstrated practical usefulness and general merit. At present these appear to be of such magnitude as to insure wide adoption.

During the last ten years the high-compression, or Diesel cycle, in combustion engines has worked nothing short of a revolution, having brought to the prime mover its choicest heritage—the highest thermodynamic efficiency known. The fuel economies of these engines have forced them to the front. They have become extremely reliable and easy to operate; instances are becoming common of long runs without overhaul, long-continued performance without shutdown or forced stop of any kind. There is one record with a marine Diesel of 27,000 miles without trouble or adjustment. Another engine ran 18 months, 24 hours daily, with 2 hours' shutdown each Sunday morning for inspection, no part being replaced during this time. A Diesel ship of 8000 tons, 2500 i.hp., has run continually for ten years; her mileage is more than 500,000 and she is still "going strong;" her lay-ups for repairs to machinery have been small and on the average less than they would have been with steam equipment, there being no boilers to reckon with. Beginning with this particular ship, there are now 325 Diesel-engined ships, representing a deadweight tonnage of more than 1,250,000 tons, ocean-going. Again, about 90 per cent of the cancellations of ship building during the recent depression have been for steam vessels.

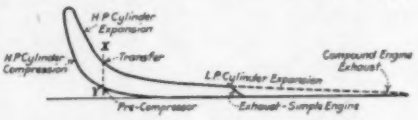


Fig. 1. Indicator Card of Diesel engine

At first steam engineers refused to operate Diesels in ships, but this is now changed and motorships are in such high favor that they are leaving steam vessels and seeking jobs on Diesel ships. All this emphasizes the fact that dependable, high-efficiency, oil-burning combustion engines have arrived.

As experience is gained with these engines, however, there have developed some objectional features which are serious. Incidentally the three-stage high-pressure air-injection pumps are more or less sensitive and require considerable experienced attention, but what is really serious is the great weight of the engines and the heavy capital charge or first cost. Though they occupy somewhat less space than boilers and engines, the weights of Diesels are on a par with, if not somewhat in excess of, those of reciprocating engines with their boilers, and decidedly in excess of those of watertube boilers and turbines. Diesels now in the merchant service illustrate this. The standard product of the largest builder of these engines for the merchant service weighs about 450 lb. per shaft horsepower, and is large and bulky. A substantial increase in tonnage of freight carried is only one of the gains that would be secured, could these engines be made much lighter and smaller for the same power.

The weight is not the only difficulty with these large engines, however, for they cost more than steam equipment of equal power. Again, it has been found that almost without exception a grade of fuel oil known as Diesel oil must be used, costing more than bunker oil.

Now, let us look into the pos-

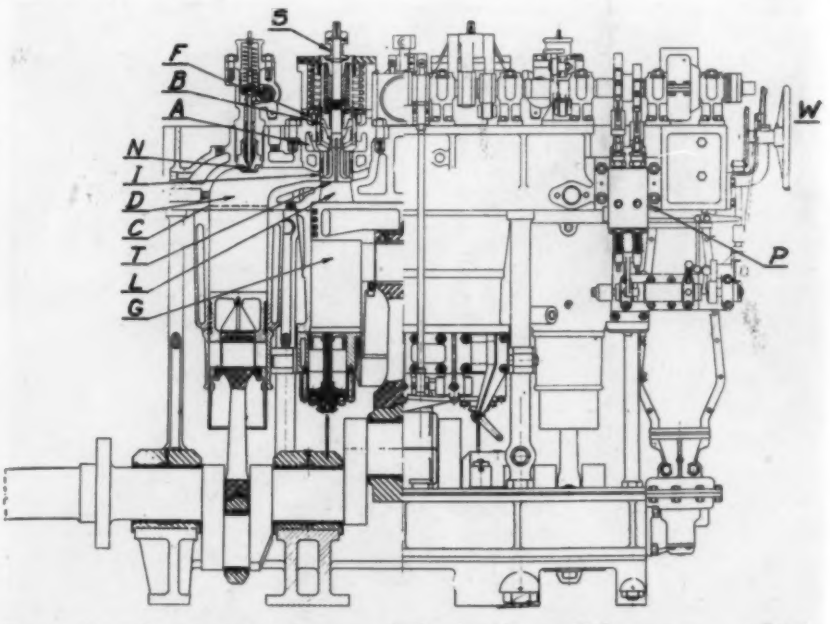


Fig. 2. Internal construction of compound Diesel with two high pressure or combustion cylinders and low pressure cylinder in center

sibility of overcoming the two principal difficulties, viz., the capital charge and the excessive weight and size of the engine. In a report made by a group of engineers in 1900, it was stated that if the combustion engine could be successfully compounded a most important gain would be made in its weight and size. The fact that compounding presents other advantages has been known to engineers for a number of years, but the difficulties have been looked upon as insurmountable. The fact that Diesel himself, in the '90's, undertook the construction of a compound, the total failure of which received wide publicity, reports of these failures finally getting into textbooks, seemed to give substantial corroboration to this point of view. A close study of Diesel's embodiment, in view of present knowledge, reveals a total lack of most of the features that we now recognize as essential to success. There have been one or two isolated workers in England and Germany who have not been so ready to believe this statement, feeling that the next great step in combustion engines, as in the case of steam, is bound to be compounding, but practical difficulties still intervened and no advance was made or even serious work done until within the past couple of years.

A year ago Professor Watkinson, director of the important engineering laboratories of Liverpool University, in discussing an epoch-making paper by Engineer-Commander Hawkes on the Admiralty's extensive research on Diesels, stated, in substance, that we must recognize that the combustion engine in its present state was very crude and in compounding only lies the line along which the next great step in progress would be made. And he also stated that much greater results are bound to follow the compounding of combustion engines than was ever realized by compounding steam engines; first, because of the very much greater range of pressures available, and secondly, because the great enemy to compounding in steam, viz., condensation, is not present.

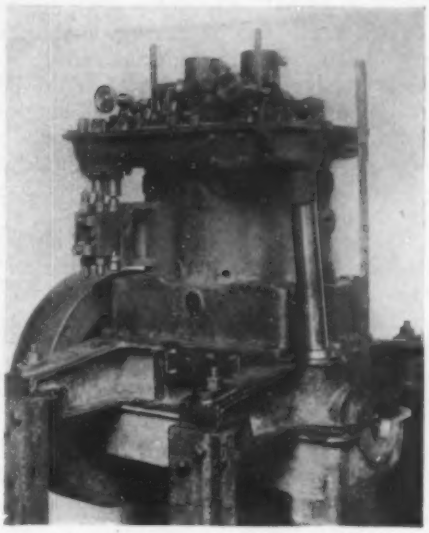


Fig. 3. Small Compound Diesel with high and low pressure cylinder

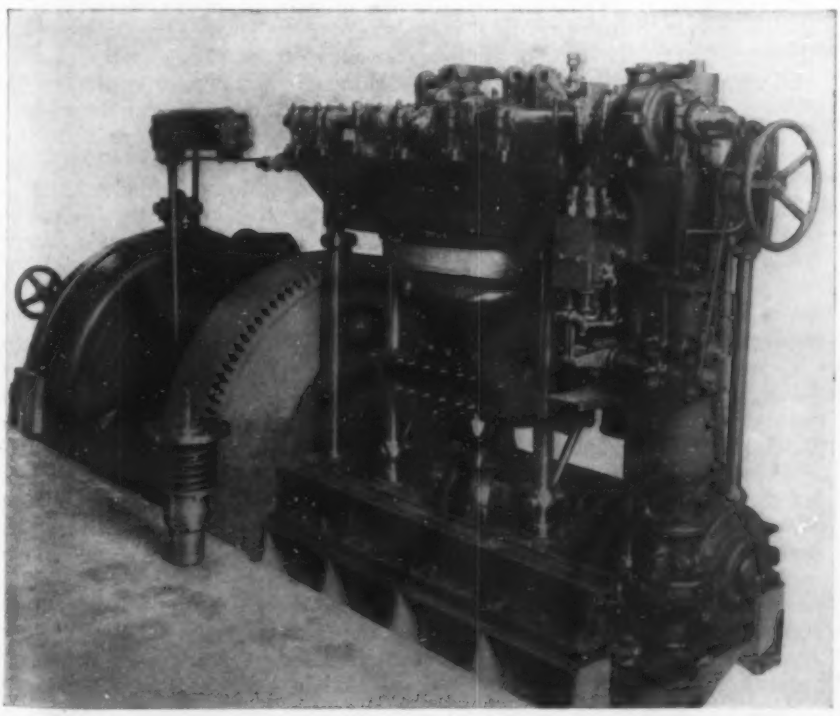


Fig. 4. Marine compound oil engine built for heavy duty. Weighs less than 30 pounds per brake-horsepower

Activity in this field is prodigious and workers in various parts of the world are commencing to realize that a great advance step is imminent. In America, a group headed by the author has been engaged on this problem for upwards of thirty years. Starting in 1890, his first compound was running before the World's Fair. A number of engines have steadily followed each other, each involving improvements resulting from previous experience, until the essential problems have been conquered. Not only has the principle been thoroughly established, but all the important refinements have been worked out, and, finally, an engine embodying practically all the advances has been subjected to long, continuous runs. Data almost invaluable to the art have been secured, together with a series of indicator cards and diagrams that exceed a thousand in number.

The outcome has been that various prophecies of thoughtful engineers in the past have been more than fulfilled and there is every evidence that the heavy-duty compound combustion engine is everything that was hoped for. It is light compared with the normal Diesel, being in special cases less than one-tenth, and in some instances less than one-twentieth, in weight for the same output. Its mechanical efficiency is extremely high, a distinct gain in overall efficiency from fuel to shaft has been made, as well as a very definite gain in simplicity, direct performance and smoothness of the crankshaft diagram.

The lightness and simplicity of the compound solve the capital-charge factor automatically. Engines and machinery in the final analysis usually cost a given amount per pound. It is found that there is no structural demand or refinement in the compound that has not already been met in the Diesel—the same range of pressure and temperatures is handled throughout by the effective two-stage method, which is now well established. Engines of this type weighing only a fraction of the weight of the present Diesel will inevitably be found to be much less in first cost as well as in cost of upkeep.

Much higher powers than are now available are thought to be of extreme importance and much interest is centered upon the queston; in fact, the more advanced among the Diesel builders are today concentrating upon ways and means to attain still higher powers from a single cylinder working on

its present cycle. Of course this will increase instead of decrease the weight per horsepower. It is to the compound that we must look for a solution of this problem, for the reason that within present cylinder and cylinderwall limitations, powers in excess of 10,000 hp. per engine are entirely practicable and are accompanied by all of the progress of this work for a space and capital charge that have been pointed out.

Our own Government has watched the progress of this work for a number of years, inspected the development in its various stages, and has come forward with orders for an initial engine which, together with orders from other sources, is now under construction. To illustrate to what low figures the compound principle can be relied upon to bring the heavy-oil engine, it should be stated that among these orders is one now under construction to weigh only about five pounds to the brake horsepower.

The reason for the great weight in all classes of Diesel engines is apparent when it is understood that they are designed around an extremely small quantity of air and oxygen at each stroke, an amount so minute as to be quite surprising when compared to the ponderous engine itself. The volume of the gases available to do work is limited to the size of the combustion space, and when it is remembered that this is confined to a small crevice in the end of the cylinder of the order of one-twentieth of the travel of the piston, the limitation is at once seen. Attempts to make it larger produce both compression and ignition temperatures that are too low and we have semi-Diesel and surface-ignition engines confined to smaller sizes with tendencies to a lower grade of performance.

Let us look for a moment, at a Diesel indicator card, Fig. I. Draw the vertical line *XY* and it is easy to see that the expansion pressures to the left are high and should do their work in a high-pressure cylinder, whereas those to the right, especially following the dotted extension line of expansion, are definitely low pressures and should do their work in a low-pressure cylinder suitable for the purpose. This is practically all that is attempted in compounding combustion engines, that is, providing separate cylinders suited to the different pressure ranges.

The vertical *XY* also divides the compression curve into two stages, low and high, the latter taking place in the combustion cylinder proper as a second stage. No compressor delivering 500 or more pounds per square inch will undertake to do so in a single stage; there would be at least two stages. The old single-stage compression is discarded in the compound and this modern method of two-stage compression is adopted.

Supercharging or compressing in two stages gives the controlling advantage in that a much larger volume of gases may be handled. The clearance spaces may be many times the size of those in the Diesel, and yet it is perfectly simple to bring these large volumes up to the requisite pressure and incandescent temperatures at the instant of fuel injection.

With the large clearance volume we no longer have difficulty with solid injection, nor do we have any difficulty in using a wide range of heavy fuels. It has been known for years that as soon as the oil spray encounters chilled or even red-hot walls the efficiency drops. Here the oil fog may penetrate the deep masses of hot compressed air with instantaneous effect in every direction from the spray nozzle without encountering chilled walls, and instantaneous and very complete combustion results. In the compound engine the clearance volume is so large that the entire high-pressure piston displacement causes it to lose only a fraction of its pressure, thus bringing to the second stage, or low pressure, both ample volume and pressure so that this piston (representing 6, 8 or even 10 times the area of the high-pressure) is driven to the end of its stroke with pressure still above the atmosphere.

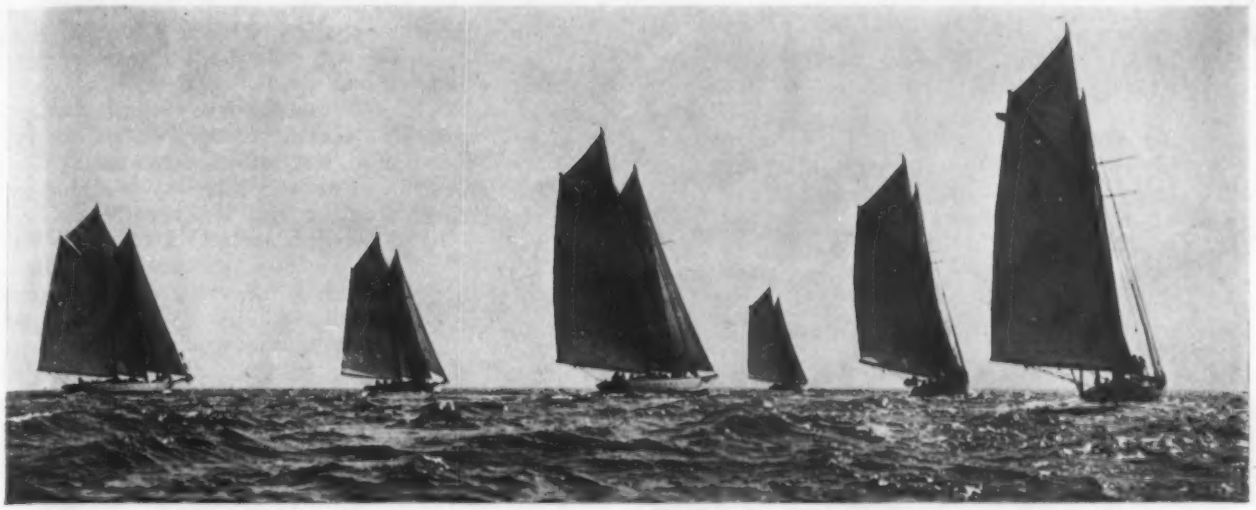
How Lightness is Obtained in the Compound Engine

The question often asked is, to just what is due the smallness and lightness of the compound engine? It is this: In the four-cycle Diesel we have the tonnage of metal due to the presence of high pressures, operating at a ridiculously low material efficiency because these high pressures persist only about 2½ per cent of the total time. The Diesel indicator card rises abruptly and immediately falls. All the rest of the time, over 95 per cent, either low pressures or no pressures at all, are present, whereas in the compound the pressures *persist* and we are dealing with great blocks of power. Although the pressures are not materially higher than in Diesel practice, they are made to persist practically clear across the card, producing a very large gross mean effective. This is instantly followed by another line clear across the card, again producing another large gross mean effective in the low-pressure cylinder when referred to the high-pressure area, all from a single fuel injection. Instead of 60 to 70 lb. net mean effective to the crank, delivering its power through a few degrees only of one stroke in four, in the compound we have two net mean effectives, each of 300 or 400 lb. per square inch, succeeding each other and covering two strokes out of the four from a single fuel injection, giving very much better crank-effort distribution for power purposes. The point of paramount interest is that these two large blocks of power are secured *not by any material increase of pressures,* but by using large quantities of power gases, and "hanging on" to the pressures we have in those gases throughout practically two complete strokes, clear across the card twice, thus abstracting much more of the power they contain before exhausting.

Internal Construction of the Compound

Now as to the construction of the compound, Fig. 2 shows an elevation to the right of the center, and longitudinal section to the left, of the engine shown in Fig. 4. The two high-pressure or combustion pistons on their out stroke are at the ends, and in the center is the low-pressure at its extreme in stroke. The sturdy construction is indicated by the size of the crankshaft, about 50 per cent larger than in any other combustion engine of which the author has knowledge, approaching, as it does, the bore of the combustion cylinders themselves. The fuel pumps *P* and the control and manipulating wheel *W* are shown in elevation to the right. To the left the large dome of clearance *D*, forming the combustion chamber of the compound, stands out in marked contrast to standard Diesel practice, which is shown by the little space *C* between the solid horizontal line at the base of the clearance and the dotted horizontal line just above. The dome is large and forms an upward extension of the combustion cylinder, extending also to the right in a large sweep surrounding the transfer valve *T* which seals the transfer port *L*. The sleeve-like induction valve *I* is shown seated on top of the transfer valve and is controlled by the cam-operated fork *F*. The transfer valve and sleeve are lifted by a fork not shown, located in thimble *S* near the top of the stem. The first-stage annular compression pump *G* surrounding

(*Continued on page* 112)



Start of the "two-stickers" in the race from Morris Cove to New London last summer. The N. Y. Y. C. cruise again will be one of the events of the coming season

The Month in Yachting

Chicago Pageant of Progress Dates

The motor boat races and water carnival, held last August in connection with the Chicago Pageant of Progress, were so successful that they will be repeated this coming summer, and Sheldon Clark, Commodore of the Chicago Y. C., is already on the job making out programs of the events and lining up possible entries.

The dates for the Pageant, as announced last September, are July 29 to August 13 inclusive. The racing will not occupy all of this time, however, and the specific dates for the runabout events are the 4th, 5th and 6th of August. The hydroplane races will take place August 10th, 11th, 12th and 13th.

The largest cash prize distribution ever offered will be given at these races (so say the committee) and in addition to the events mentioned there will be races for cruisers and other types of boats to take up the intervening dates during the exposition. It is expected this will be one of the biggest events of the power boat racing season of 1922.

The Tax on Yachts and Motor Boats

Congress, after an unusual amount of bungling, passed a revised Revenue Act at its last session which suited no one, and one which will impose a distinct hardship on the boat and yacht building industry, on yachtsmen generally, and which will adversely affect the sport by curtailing the number of new boats built, especially of the larger size. It does, however, furnish some measure of relief to the smaller boat owners by exempting those under 32 feet in length and under five net tons from paying the annual user's tax. As the majority of power boats and sail boats are under this size, this is some gain, though it still leaves us with a fight on our hands next term, when the new bill will be undoubtedly further amended.

The tax on new boats reads:

"Sec. 900, Subdivision 14. Yachts and motor boats not designed for trade, fishing or national defense, and pleasure boats and pleasure canoes, if sold for more than $100, 10 per centum."

The House reduced this tax from 10% to 5%, but the Senate, for some reason best known to itself, restored the 10% and raised the exemption to $100 on Senator W. M. Calder's motion.

The section which imposes the annual tax on the use of yachts reads:

"Sec. 1003. That on and after July 1, 1922, and thereafter on July 1 in each year, and also at the time of the original purchase of a new boat by a user, if on any other date than July 1, there shall be levied, assessed, collected, and paid, in lieu of the tax imposed by the Revenue Act of 1918, upon the use of yachts, pleasure boats, power boats, sailing boats and motor boats with fixed engines, of over five net tons and over thirty-two feet in length, not used exclusively for trade, fishing or national defense, or not built according to plans and specifications approved by the Navy Department, a special excise tax to be based on each yacht or boat, at rates as follows: Yachts, pleasure boats, power boats, motor boats with fixed engines, and sailing boats, of over five net tons, length over thirty-two feet and not over fifty feet, $1 for each foot; length over fifty feet and not over one hundred feet, $2 for each foot; length over one hundred feet, $4 for each foot."

The difference between this provision and the provision of the old act is that boats under five net tons and under thirty-two feet in length are exempt from the annual tax. This is a victory for the owners of small yachts.

Many Six-Meter Boats Building

It seems now as if there will be a goodly fleet of little six-meter boats from which the international committee of the Seawanhaka-Corinthian Y. C. can pick a team to meet the British team that will race over here next September. Already (at this writing) some ten new boats are assured, and we would not be surprised to find some twelve to fifteen boats before the gun goes for the first race of the season.

Here are some of those who are positively building: Frank C. Paine and C. H. W. Foster, Boston, from designs by Starling Burgess, and building at Lawley's; Johnson De-Forest and H. B. Plant, from designs by C. D. Mower and F. M. Hoyt; A. G. Hanan, one boat from his own design and possibly two

Valhalla, the English auxiliary ship rigged yacht which finished third in the trans-Atlantic race of 1905. She was converted to a merchantman and was lost last December

boats; Clinton H. Crane and Hendon Chubb will have one together, the designer being not yet named. Henry J. Gielow is designing two, one being for Mr. Birmingham and one for a yachtsman not yet announced. Paul L. Hammond will have a new boat from Bristol, and two syndicates are negotiating for boats, one at least being from the board of John G. Alden, of Boston.

On the other side, several other six-meter boats are under construction besides those mentioned here last month, so that they should send a team of at least four boats.

A Fifteen Thousand Mile Voyage in a Yawl

A very unusual voyage in a small boat was completed early in October when the little 28-ton yawl *Amarylis* arrived at Sydney, Australia, after a voyage from Plymouth, England, which lasted about 13 months. The *Amarylis* is an old type English yawl with straight stem, narrow beam, mainmast stepped well amidships, and a small mizzen stepped in the after overhang. Her skipper and owner was Lt. G. H. P. Muhlhauser, R. N. R. When asked his reasons for making the voyage after his arrival at Sydney, Lt. Muhlhauser said: "Well, I simply came. The war was over and—well, things were dead, so I just thought I would make the trip."

In giving a brief outline of his trip Lt. Muhlhauser said: "We left England on September 6, 1920, and we're here now. We spent the interval (13 months) getting here.

"When we left England I had as companions three former officers who served in the war. Two of them were unable to get work, and were hopeful of getting something to do in other parts of the world. We crossed the Atlantic in good weather and cruised about the West Indies. The two men looking for work got jobs at Barbadoes, and left me. Then I took on the French lad who is now with me.

"Then, the third companion left the boat also. At least he was forced to leave. He was recaptured by his wife. Soon after we left England she became alarmed for his safety, and pushed off on a steamer for Jamaica, knowing we would call there. So as soon as we poked our nose into Kingston, there she was waiting for us. And he was off the boat before you could say 'knife.'

"From there we came through the Canal, picked up Sam, the Indian, and sailed across the Pacific, around the islands, touching at Noumea and striking the Australian coast at Cape Byron. It was between Noumea and Sydney that we struck the worst weather of the whole trip.

"We ran into a thunderstorm one night, and the lightning—well, I've never seen anything like it. The ocean was lit up like day. The squalls were terrific. All the time I was laboriously climbing up to windward, then I would have to run before a squall, and would find myself exactly where I was before I started to windward.

"But we came through it, all right. The only mishap was the loss of the jib, and that was the first sail I had lost in the whole of the 15,000 miles.

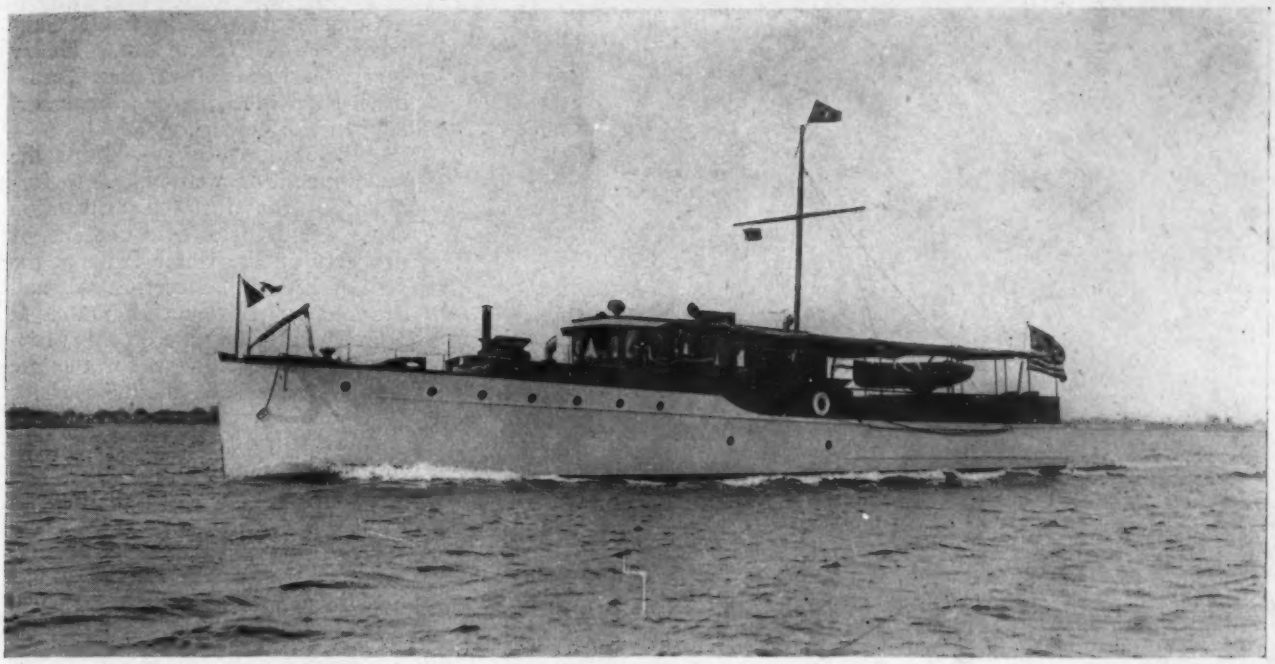
"But apart from the bad weather off the Australian coast the chief difficulty of the trip was with the tiller. I would have preferred a wheel, but there was not enough time to fit one, so had to steer for 15,000 miles with a tiller 8 ft. long, awkward enough to knock a man over.

"For a great part of the journey I had only the French lad and the Indian with me. They are both young fellows, and I could hardly leave the boat in their charge for more than a day. I never slept ashore one night. Also, if I ever take such a trip on again, it will be in either a ketch or a schooner. With only a small crew they are more easily handled than a yawl-rigged boat."

The Famous Auxiliary Valhalla Lost

Lloyd's reported early in December that the auxiliary full-rigged ship *Valhalla* had foundered off Cape St. Vincent in bad weather after a breakdown of machinery which could not be repaired.

Valhalla, which all American yachtsmen will remember as one of the contestants in the trans-Atlantic race of 1905 for the German Emperor's Cup, was of 1,490 tons Thames measurement, was built by Messrs. Ramage and Ferguson in 1892 at Leith from designs by the late Mr. W. C. Storey, for Mr. Joseph Frederick Laycock, and was one of the largest yachts ever built, and the largest auxiliary, her power being steam. In her early days as a



Topaz, owned by J. Richmond Fales, of Providence, R. I., and built by F. S. Nock, of East Greenwich. She is a fine example of a modern, up-to-the-minute power cruiser

yacht she had a crew of nearly one hundred and thirty men on board.

After Mr. Laycock disposed of her she was owned by the Comte Boni de Castellane and the Earl of Crawford and Balcarres, the latter of whom undertook many scientific cruises in her, covering well over two hundred thousand miles. In 1905, in the famous race across the Atlantic which was won by the American schooner *Atlantic*, sailed by the late "Charlie" Barr, she finished in third place, her time being 14 days, 2 hours. Her best day's run on this passage was 310 nautical miles. *Valhalla* was 245 ft. in length over all and drew 20½ ft.

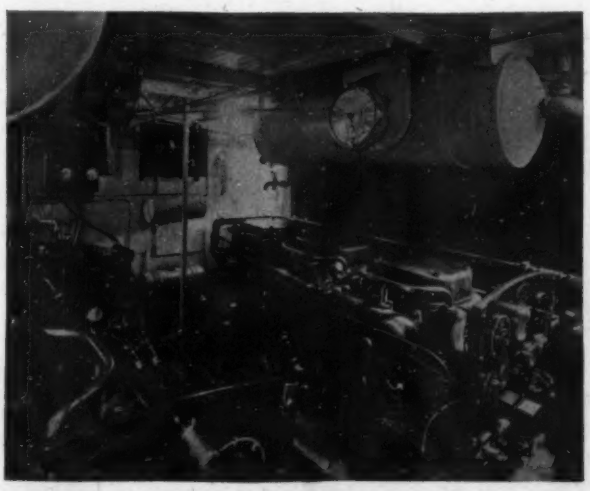
During the war she saw service at the Dardanelles as a submarine repair ship, and after the armistice was sold into trade.

Topaz, a Handsome 77-footer

IN the new power cruiser *Topaz*, owned by J. Richmond Fales, of Providence, R. I., and designed and built by Frederic S. Nock, one finds a type of yacht that is becoming increasingly popular. Compared to the average boat of these dimensions (she is 77 ft. over all, by 15 ft. 2 in. extreme beam and 4 ft. draft), the *Topaz* makes unusual mileage both as to speed and economy. This is effected by using motors of relatively small bore. The engines are two of the dual valve six-cylinder Sterlings, rated 225 hp. at 1,500 revolutions. With these engines a cruising speed of 15 miles an hour is maintained, with 18 miles maximum. The motors have a bore of only 5¾ ins. and a stroke of 6¾ ins. For maximum speed, they turned at 1450 R.P.M.

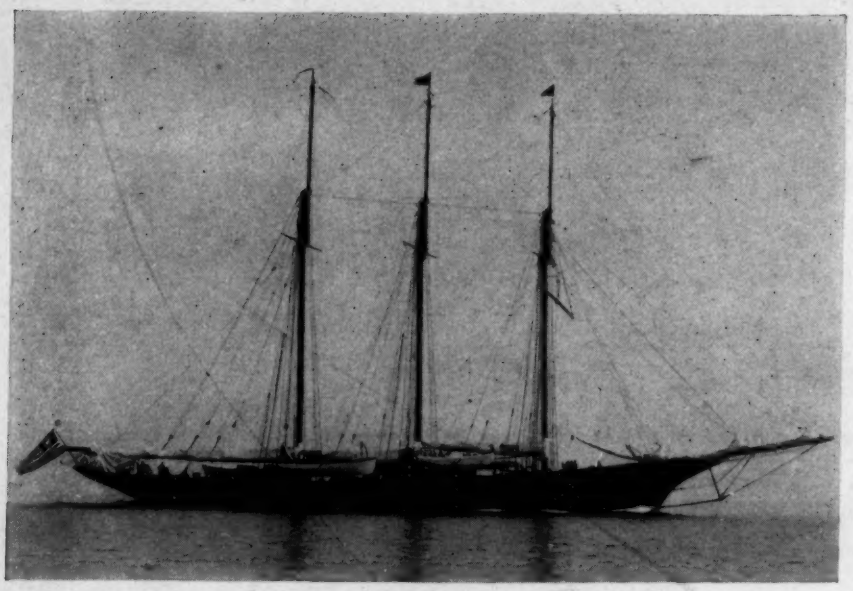
There is every indication that the marine industry is approaching a series of smaller bore motors to effect a long desired fuel economy just as this economy has been attained in the motor car industry by decreasing the bore and increasing the speed of the motor. Also, the accompanying smoother operation over the throb and impulse of the larger bore engines is most desirable.

Topaz is constructed for sea duty and is very strong. The keel, stem, deadwood, timbers, etc., are all white oak. The longitudinal members such as clamps, shelves, hogging girders, bilge stringers, and bilge clamps, sister keelsons, etc., are of



Engine room of *Topaz*, showing installation of two dual-valve Sterlings, which drive her 18 miles per hour

Below decks *Topaz* is unusual in her decorations and attractive furniture



Guinevere under power. She is the first electric drive auxiliary and the largest Diesel yacht. Built by George Lawley & Son, Inc.

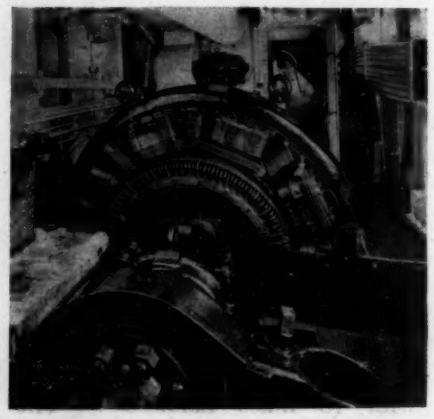
yellow pine. The planking is double, of Port Orford cedar, finished 1¼ ins. thick. All superstructures are of mahogany although the main deck bridge is 1¾ by 1⅞ white pine. The spacing of the frames and the double skinned hull are indicative of the strength of the vessel.

The owner's quarters are abaft the engine room and are arranged with a large berth and dresser running the full width of the boat. The owner's double stateroom is on the starboard side and abaft this is a single stateroom and opposite a guest's toilet room and then a guest's double stateroom.

The engine room is situated below the deck line and over same is a bridge deck enclosure arranged to be used as a dining room when required. In the after end of this enclosure, there is a large divan seat between the Victrola stand and the port entrance to the engine room.

Capital Yacht Club to Have New Home

The Capital Yacht Club of Washington, D. C., held its annual meeting on the evening of January 12th, and elected the following officers for the ensuing year:



550-H. P. Westinghouse propeller motor of Guinevere

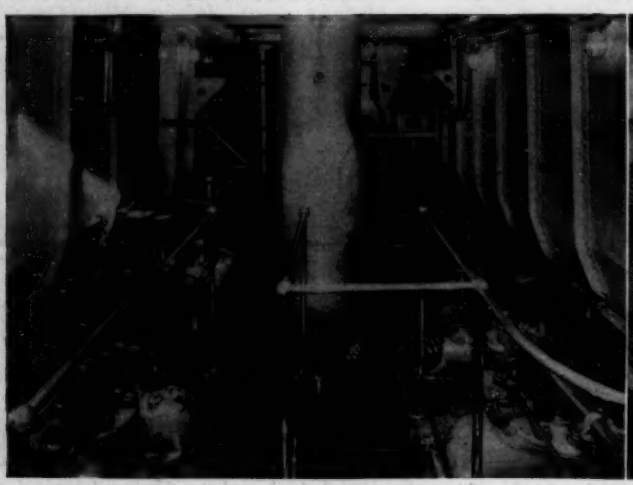
Commodore, Collingwood Sanborn; Vice-Commodore, Henry Harrison Lewis; Secretary-Treasurer, Richard S. Doyle; Measurer, Lyman F. Hewins.

A resolution was passed for the appointment of a committee to formulate plans for the acquisition from the District of Columbia of property on the water front at the foot of Eleventh Street, S. W., and the erection of a new club house. It is intended to operate on this property a marine railway for the use and convenience of the members.

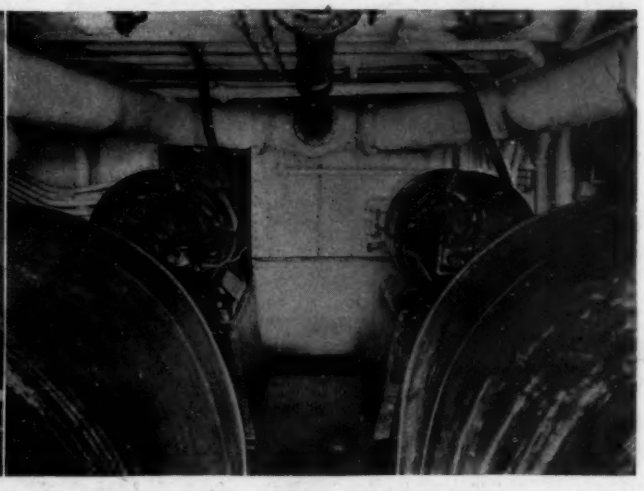
Sailplane for Canoes

Many of our readers will remember the Sailplane invented by Malcolm and T. A. McIntyre, a description of which appeared in YACHTING about a year ago and a model of which was at the Motor Boat Show last year, where it attracted the attention of every sailorman. Since then the inventors have perfected the device for use in a canoe and have successfully equipped 18 and 20-foot canoes with the inclined planes and sails. The accompanying photographs show how this has been done. The planes not only prevent leeway but prevent the canoe (or boat) from heeling, so that no matter how hard it blows the boat is sailing upright, cannot capsize, and can therefore carry much more sail than an ordinary canoe with leeboards or center boards.

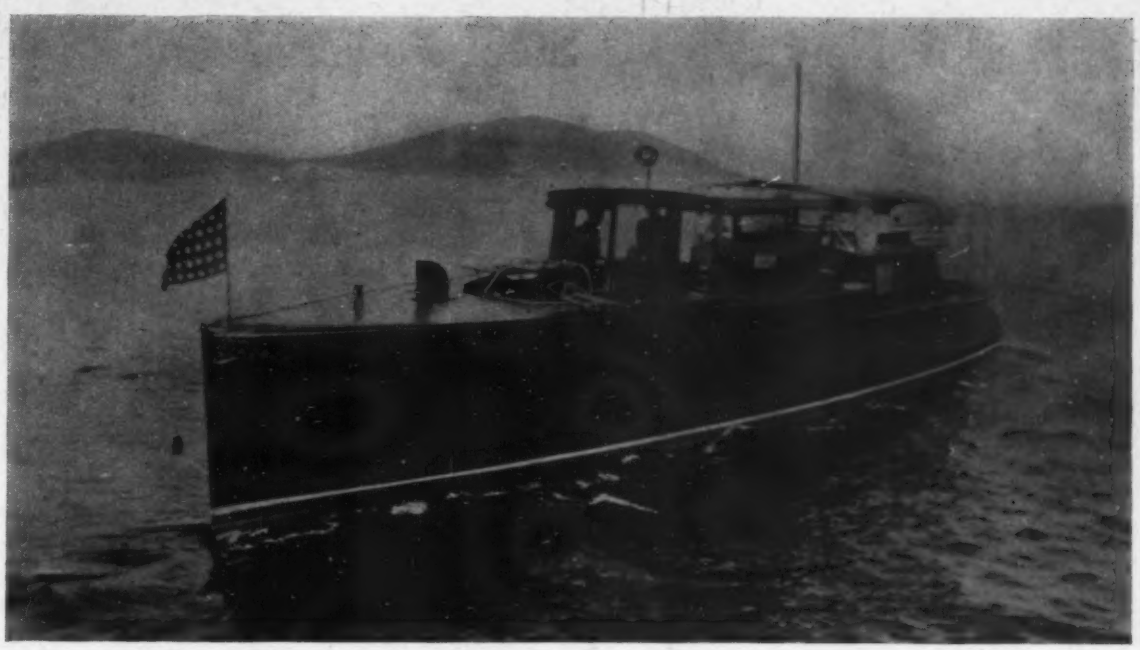
It is impossible for the wind pressure to capsize or even lay over a Sailplane unless the outrigger or planes carry away, and she will carry her mast vertical until it blows out of her. Her builders say they have stood up together in her while bowling along at the rate of ten or twelve miles per hour. She is fast in all weather on all points of sailing, particularly on the wind.



View in engine room, showing the tops of two Winton motors



Westinghouse generators used to excite main generators and supply light, heat and power to the yacht



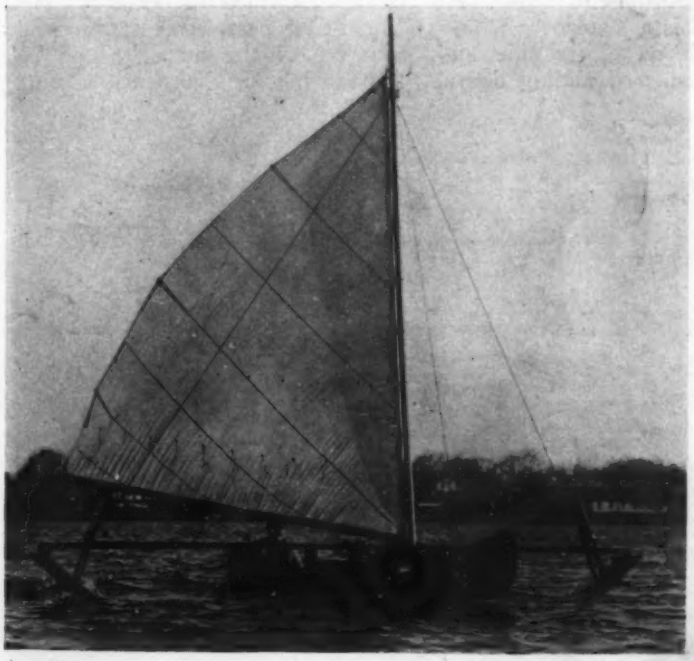
Myrno III is an unusual type of day cruiser owned by Norman DeVaux and used on Lake Tahoe. She is 50 feet long and was designed and built by Luders Marine Construction Company

By referring to the photographs it will be seen that the sailplane canoe rig consists of a single wooden outrigger with a detachable plane mounted on each end. The planes give proper lateral resistance and take the place of the inadequate canoe lee boards, and also give automatic stability with any wind pressure. The planes can be easily folded up from the canoe before landing on a beach.

Instead of stepping the mast on the bottom of the canoe, which is really too light for this purpose, the mast is stepped on a "bowsprit" or backbone, the head stay being fastened to the forward end. The shrouds lead to the outrigger ends so the thrust of the mast and planes and the pull of the rigging are all self-contained in the rig. The only strains on the canoe hull are the pull of the main sheet at the stern and the forward drive and rolling tendency of the canoe which goes through the four wing nuts on the gunwales.

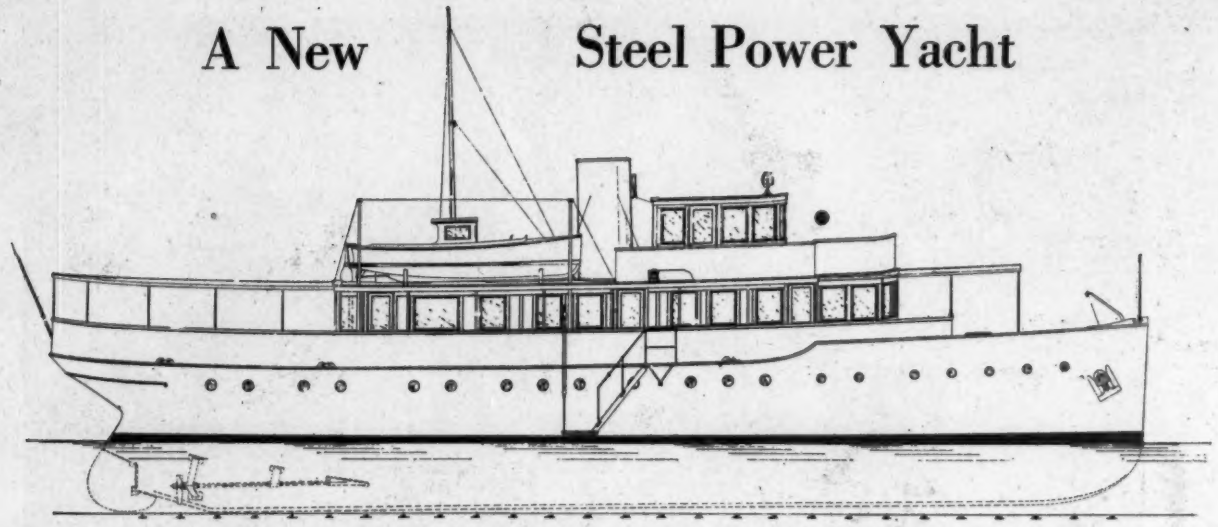
Myrno III, a Fast Day Cruiser

A very unusual type of fast day cruiser is the *Myrno III*, designed and built by the Luders Marine Construction Company for Norman De Vaux of Oakland, Cal. While she is 50 feet in length she was, nevertheless, shipped from Stamford, Conn., to California, where she now is in use on Lake Tahoe, in the Sierra Nevada Mountains, some 6,000 feet above sea level. In spite of the altitude of the lake the builders of the engines with which *Myrno III* is equipped, 200 H. P. Hall-Scott 6-cylinder motors, changed the compression on these machines so that they give as much power and the boat the same speed as she would have when operating at sea level.



The sailplane adapted for use on a canoe. With them the canoe sails without heeling, and much greater sail area can be carried than with leeboards. Speeds up to 12 miles an hour can be obtained

A New Steel Power Yacht



Profile of 98-foot power cruiser building for J. Percy Bartram, from designs by Cox & Stevens

AMONG the larger yachts which will make their appearance next spring is a wholesome, steel, twinscrew power cruiser of the houseboat type, under construction for Joseph Percy Bartram, N. Y. C., from designs by and under the supervision of Cox & Stevens, of New York. Preliminary profile and accommodation plans are shown herewith. She is named *Caritas*.

Progress on this new yacht, at the shipyard of the George Lawley & Son Corporation, is well advanced. Her principal dimensions are: Length over all 98 ft., length waterline 92 ft. 6 in., beam 20 ft., draft 6 ft. The construction will be unusually heavy. The deckhouse, pilot house, and all exterior brightwork will be of teakwood.

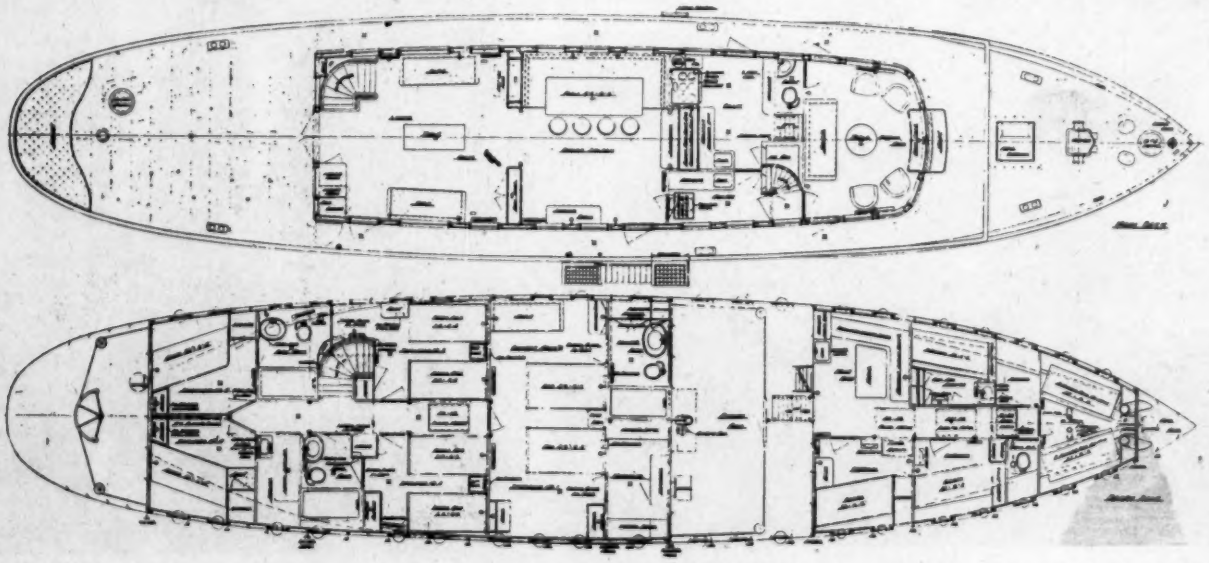
A remarkable feature of this new yacht is the amount of accommodation afforded the owner without crowding the engine room, galley, or crew's quarters. The owner's quarters on deck comprise a large smoking room forward, about ten feet in length, following which are the galley and pantry. Abaft these is the dining saloon, twelve feet in length, accessible through folding doors from the adjoining living room, which is about sixteen feet in length. There is an unbroken after deck twenty-five feet in length. The pilot house will contain steering column, chart room, etc.,

A stairway from the living room leads to the quarters below. The owner's stateroom is the full width of the boat and contains two beds, sofa, bureau, desk, etc. Directly forward of it is a large bathroom to port and wardrobe or dressing room on starboard side. On either side of the passageway leading from the owner's stateroom are two guests' rooms, each fitted with two beds with a bathroom on either side. At the after end is a stateroom with a built-in berth on either side and which, by means of sliding doors, can be converted into one double or two single rooms.

Her small boat equipment will comprise a 21-foot launch with shelter cabin, and a 16-foot launch.

The boat will be powered with a pair of 125 hp. six-cylinder Winton gasoline motors which will drive her comfortably at twelve statute miles per hour. An independent generating set, 110 volt electric lighting system, hot water heating plant, up-to-date ventilating system, and all conveniences will be embodied. Unusually large fuel and water capacity has been provided.

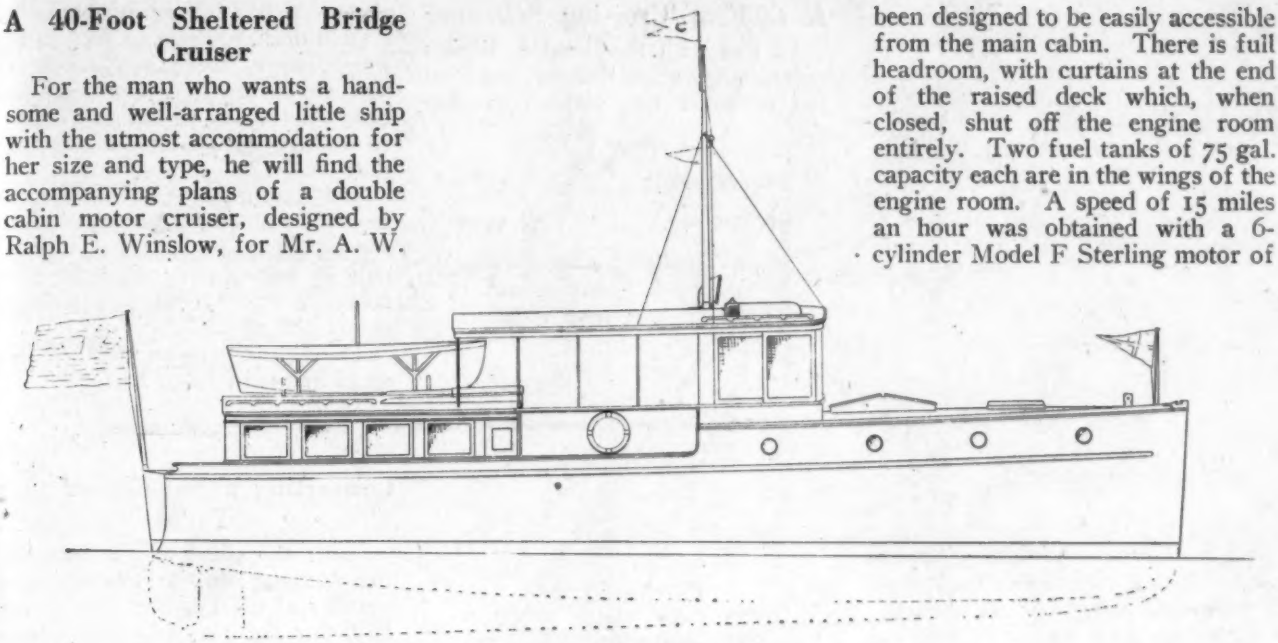
This new yacht should be unusually able. Her accommodation is greater than the average houseboat of her length, yet as regards seaworthy qualities and looks, she has the advantages of the large power cruiser. She will make an attractive addition to the New York Yacht Club fleet. Her headquarters will be off the owner's home on Caritas Island, Stamford, Conn.



Accommodation plans of main and berth decks of 98-foot power cruiser

A 40-Foot Sheltered Bridge Cruiser

For the man who wants a handsome and well-arranged little ship with the utmost accommodation for her size and type, he will find the accompanying plans of a double cabin motor cruiser, designed by Ralph E. Winslow, for Mr. A. W. Childs, a Maine yachtsman, very interesting. She is 39 ft. 11 in. overall, 10 ft. 2 in. beam and 3 ft. 6 in. draft.



A husky little sheltered bridge cruiser designed by Ralph E. Winslow

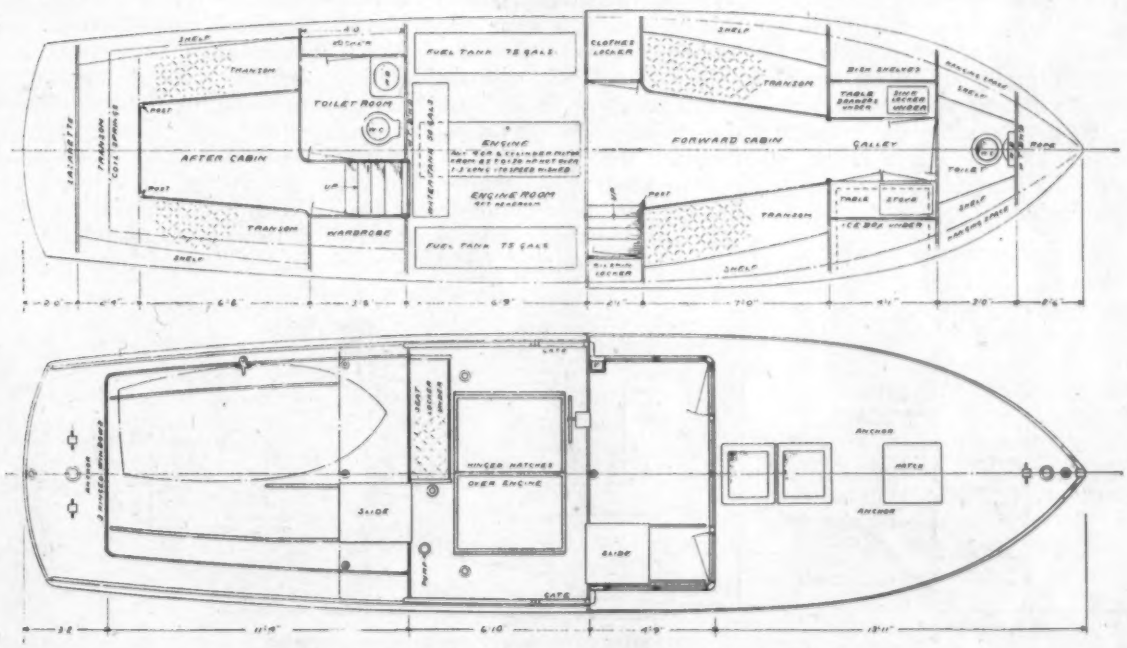
The high raised deck will make her dry in rough water and give full headroom in the forward compartments. When there is an amidships bridge on a boat it is usually the most popular place, so the bridge was made of ample size and has seating room for seven to nine persons.

The accommodations are sufficient for from five to seven persons and the design is laid out so that there is perfect comfort for living on board during the summer, or for extended cruises. The main cabin is forward and is provided with two extension transoms, clothes lockers, dining table, etc. Back of the transoms are pipe berths, which may be swung up to form two additional berths, making sleeping accommodation for four in this cabin. The companionway to this cabin is thoroughly protected from the weather by the steering shelter at the forward end of the bridge.

There is a complete galley just forward of the main cabin, ventilated by a hatch and portlights. Forward of the galley is a toilet room and access hatch to the bow locker.

As such a boat as this is usually run without a paid hand, the engine room under the bridge deck has been designed to be easily accessible from the main cabin. There is full headroom, with curtains at the end of the raised deck which, when closed, shut off the engine room entirely. Two fuel tanks of 75 gal. capacity each are in the wings of the engine room. A speed of 15 miles an hour was obtained with a 6-cylinder Model F Sterling motor of 85 hp. at 800 rpm., although with a motor developing from 25 to 100 hp., speeds of from 10 to 17 miles an hour can be expected. Any motor not over 7 ft. long or 3 ft. 9 in. high over all from bottom of base, or not weighing over 2,800 lbs., that will develop 25 to 100 hp., will provide a suitable power-plant.

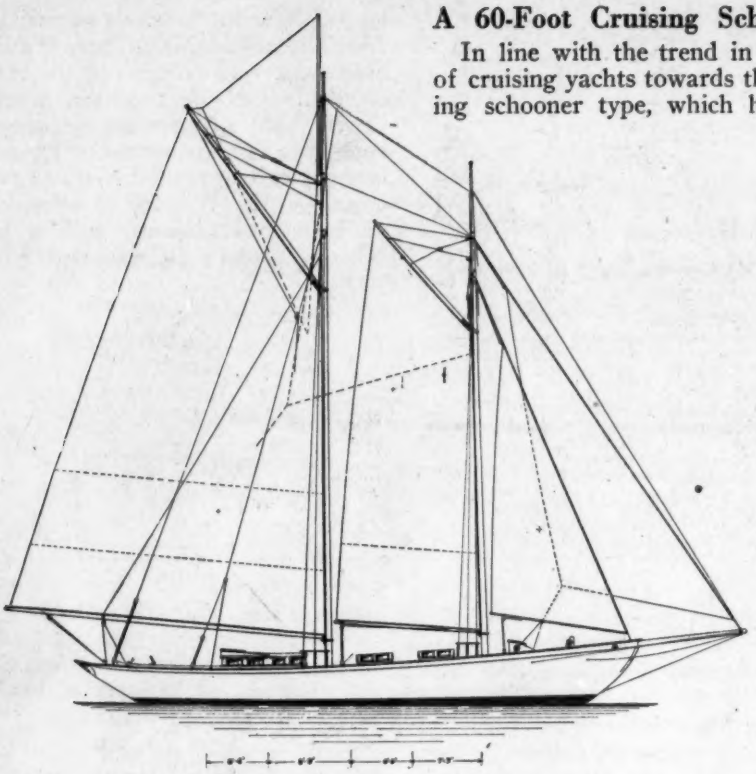
A steering shelter is provided at the forward end of the bridge to protect the helmsman, with side curtains and rail weather cloths, and there are comfortable seats at both sides and at the after end of the bridge. A table can be used on the bridge and there is also accommodation for those who like to sleep outdoors. All motor controls are



Deck and accommodation plans of 40-foot sheltered bridge cruiser

A 60-Foot Cruising Schooner

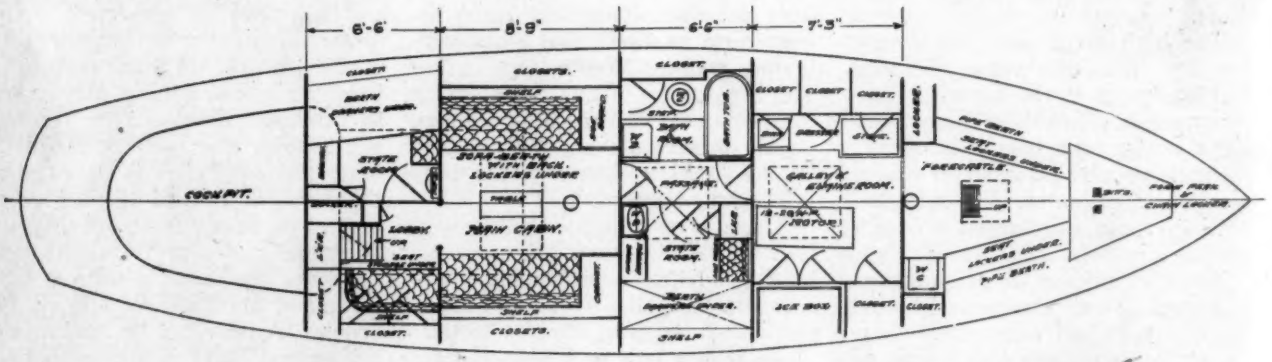
In line with the trend in design of cruising yachts towards the fishing schooner type, which has become so deservedly popular, comes this little 60-foot over all auxiliary schooner from the board of W. H. Millett of Atlantic, Mass. While incorporating the underwater lines of the fisherman, the designer has modified the ends so as to give her a more yachty appearance, and yet has kept in them the desirable features of buoyancy and seaworthy



The boat is only 60 feet long over all, yet she has full head-room under a flush deck. She is 47 feet on the water, has 15 feet beam and draws 8 feet 6 inches of water. She has 2461 square feet of sail and carries 10 tons of outside ballast and four tons inside.

The arrangement below is well worked out and gives two staterooms, a large main saloon, a vestabule or steerage for use as a chart room, a bath room and a large galley.

The motor is to be installed forward and is of 12 to 20 H. P.



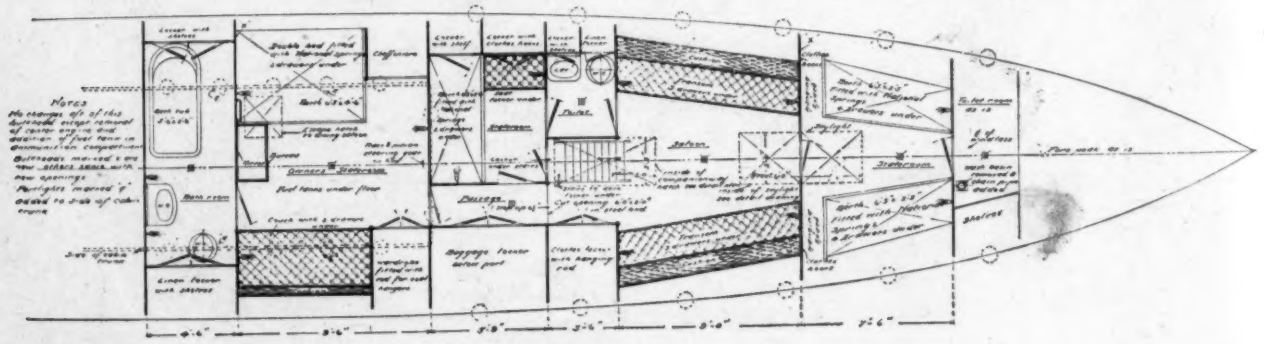
Sail and accommodation plan of 60-foot overall auxiliary schooner designed by W. H. Millett

led to the steering wheel position.

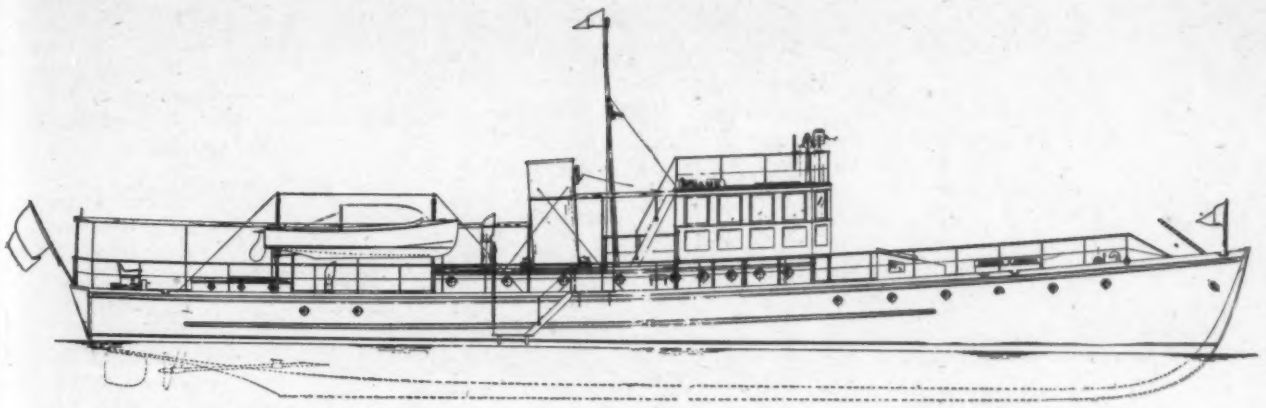
Separated by a watertight bulkhead abaft the engine room is the after cabin, fitted with three berths equipped with slat springs, a large toilet room, and wardrobe with plenty of lockers, etc. There is space on the roof for stowage of a 10-foot tender.

Converting a Sub-Chaser to a Yacht

With the close of the war and the coming on the market of a number of the 110-foot sub-chasers built for the Navy Department, a great many of these vessels have been bought for pleasure and commercial purposes. The plans for the conversion of one of these boats into a power cruiser have been made by Wm. H. Hand, Jr., of New Bedford, Mass., and are shown herewith. They provide for the change without recutting the deck or changing the deck houses to any extent, and yet they provide ample and comfortable quarters below and in the deck house amidships. With the removal of one of the three engines considerable reduction in the cost of operation is effected



Accommodation plan of 110-foot sub-chaser, altered for yacht use by W. H. Hand, Jr.

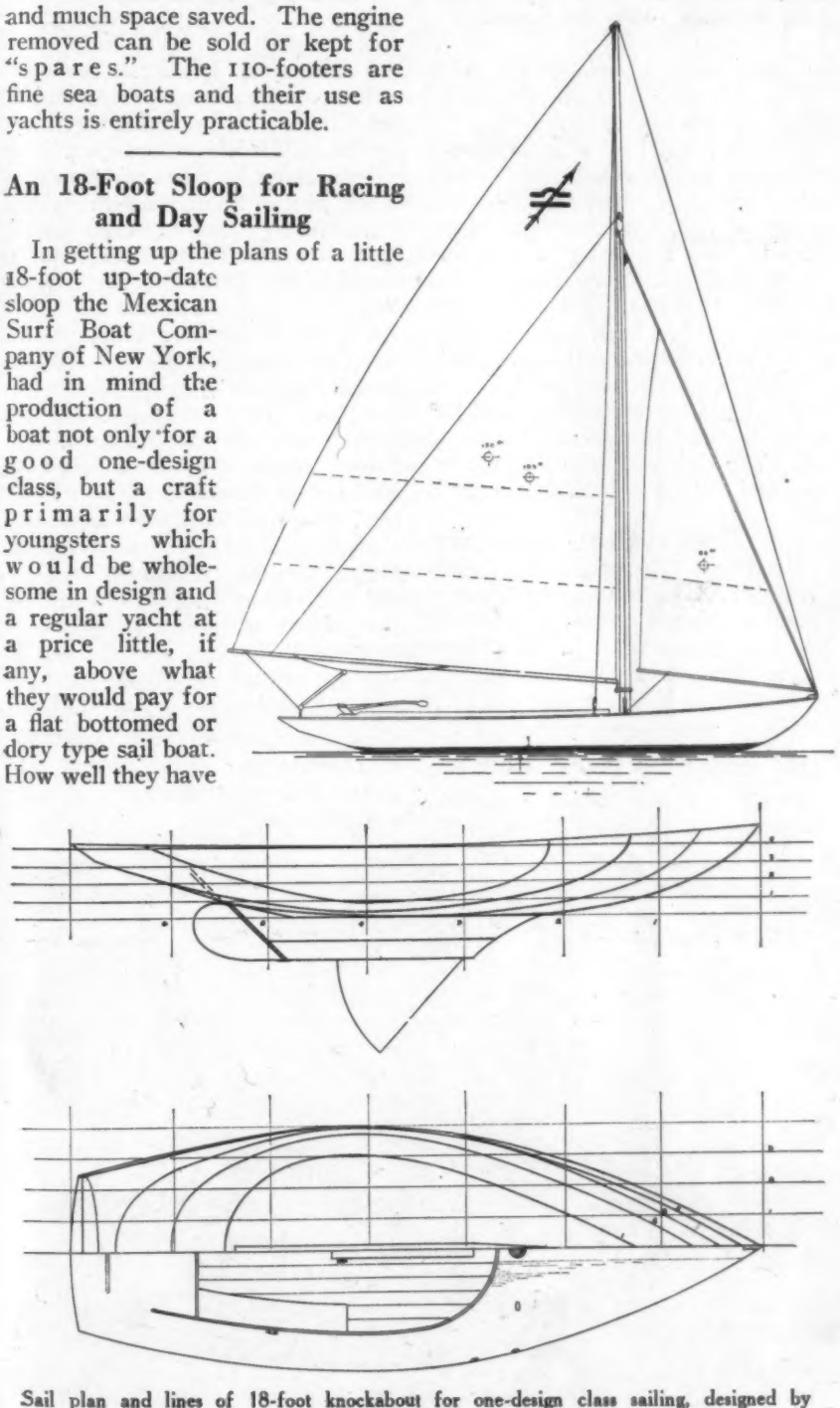


Profile of 110-foot sub-chaser converted for pleasure boat purposes by W. H. Hand, Jr.

and much space saved. The engine removed can be sold or kept for "spares." The 110-footers are fine sea boats and their use as yachts is entirely practicable.

An 18-Foot Sloop for Racing and Day Sailing

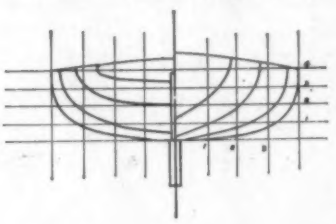
In getting up the plans of a little 18-foot up-to-date sloop the Mexican Surf Boat Company of New York, had in mind the production of a boat not only for a good one-design class, but a craft primarily for youngsters which would be wholesome in design and a regular yacht at a price little, if any, above what they would pay for a flat bottomed or dory type sail boat. How well they have succeeded is shown in the accompanying plans.



Sail plan and lines of 18-foot knockabout for one-design class sailing, designed by Mexican Surf Boat Company

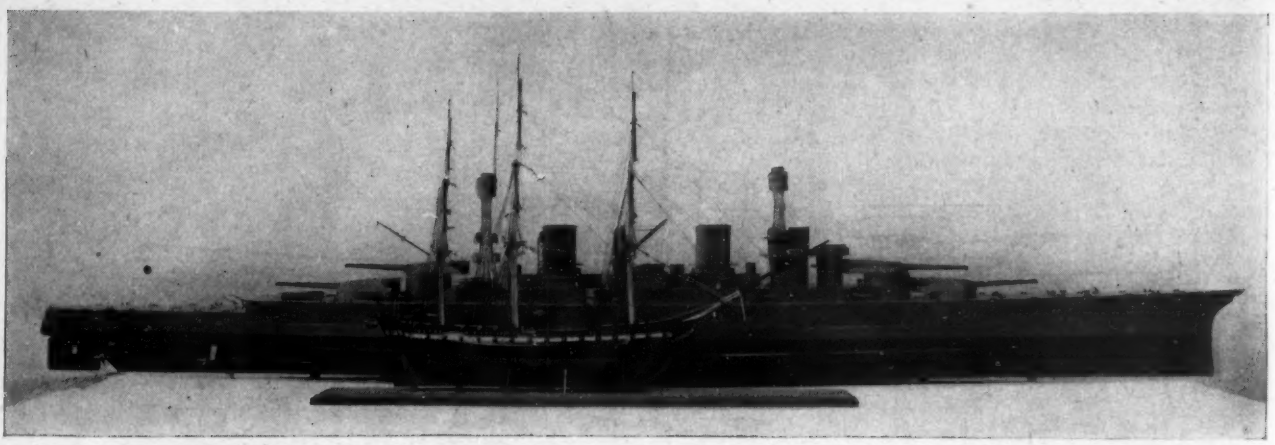
As boats of this kind are often sailed in shoal water, the boat was made a centerboarder, but with outside lead keel that will add a lot to her stability as well as to her carrying and seaworthy qualities, while the fact that she is round bilged and smooth planked adds a lot to her looks and general appearance. The lines are easy, the ends moderate and well balanced with enough fullness to insure good stability while the fore and aft lines are easy. Her general dimensions are: length over all, 18 feet; length water line, 12 feet 6 inches; beam extreme, 6 feet 6 inches; depth extreme, 3 feet 6 inches, and draught, 2 feet, without board. Her sail area is 183 square feet, 150 of which is in the main sail, the rig being of the so-called Marconi or jib-headed type, the mast being 23 feet high above the deck. Her ballast is 400 pounds, all outside. She has air tanks, making her non-sinkable.

The boat has a very roomy cock-



pit, 8 feet long with seats on either side and a combing or wash board around the entire cockpit. This boat would make an ideal craft for any of the yachting centers on the Atlantic Coast, as she can be raced in home waters and yet is able enough to participate in races with other clubs where it means going some distance to get to the course. She also makes an extremely handy boat for knocking around and day sailing where there are not enough for a racing class.

The boat is being built on Great South Bay, on the south side of



Model of old frigate *Constitution* alongside latest battleship of the U. S. Navy. Made by H. E. Boucher Manufacturing Company for the United States Government

Long Island, and the specifications call for unusually good construction. The keel is of yellow pine, the stem and knees being hackmatack, the frames white oak, planking cedar, 5/8 inch thick, running the full length. The king plank is of mahogany, while rudder, rudder port and tiller are of oak. There is a locker under the forward end of the side seats on either side and plenty of room under the forward deck for stowage.

The price at which these boats are being turned out is extremely reasonable for a high-grade job.

Olcott Yacht Club Challenges for Douglas Cup

The Olcott Yacht Club of Olcott, N. Y., at its annual meeting decided to challenge the Toronto Canoe Club for the Douglas Cup. The Douglas Cup was given by Mr. James Douglas and is to be raced for by 14-foot dinghies built under the rules and regulations of the Lake Sailing Skiff Ass'n. The Olcott Yacht Club has a new dinghy which has been built especially for this challenge, and it believes this new boat to be the fastest in the class.

The club has had a particularly successful season. Organized in the fall of 1920, and incorporated in the spring of 1921, the members have succeeded in acquiring a site on Olcott Harbor and erecting a comfortable clubhouse. An additional piece of land has been acquired this winter upon which will be erected a dinghy shed and boat yard. It is hoped that a marine railway will be put in before hauling-out-time next fall. The club consists of 75 members and 18 boats, both power and sail.

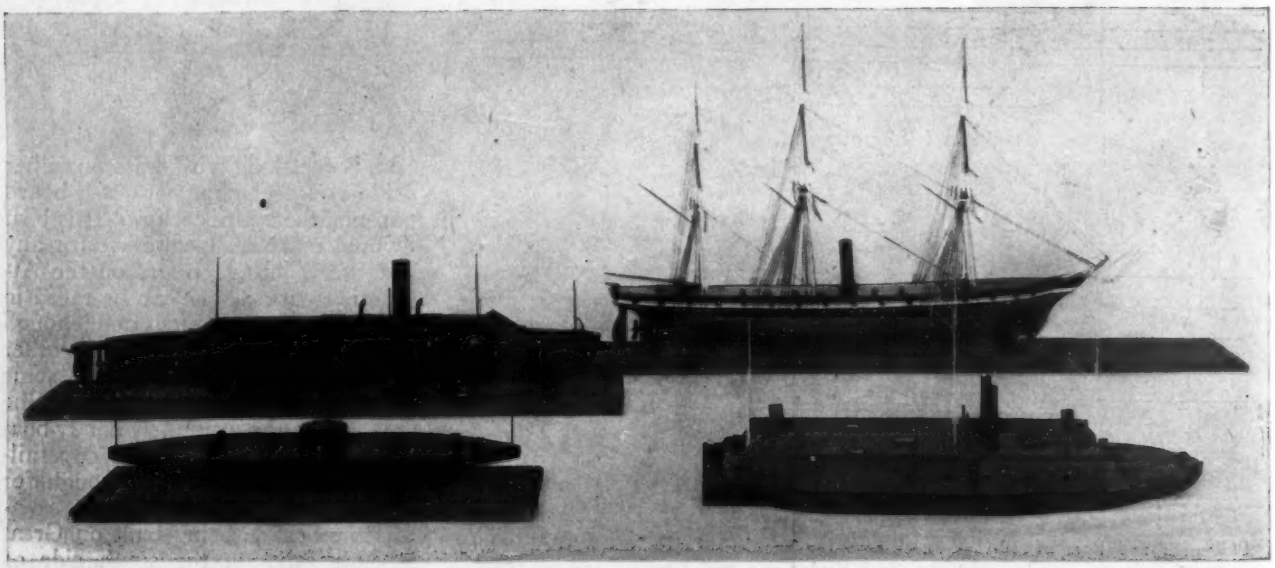
The officers elected for 1922 are as follows: Commodore, Faber Gooding; Vice-Commodore, Harry Shaeffer; Fleet Captain, Charles B. Palmer; Secretary, J. N. Mackenzie; Treasurer, Dr. F. J. Moyer, Jr.

Old and New Navy Models

Every now and then a few warships anchor in the Hudson River and Riverside Drive is crowded with spectators, come to see what the Navy looks like. The view these get from the Drive, however, is a mere nothing to what will be seen at the Motor Boat Show this year. Here one sees not only the modern Navy but ships of the time of John Paul Jones, Hull, Farragut, and Dewey.

The H. E. Boucher Mfg. Co., of New York, are exhibiting eighteen models, part of a group made for the Navy Department showing the growth and development of our Navy from the *Bon Homme Richard* to the present time. Frigates, sloops of war, monitors, "tinclads," and the modern airplanes, "subs," destroyers, and battle cruisers are represented, as well as vessels of the transition periods.

These little ships are all made to the scale of 1/8 in. to the foot and shown to the least initiated the startling difference between the vessels that made our early history and those developed during and since the late war.



The old *Hartford* and *Monitor* and gunboats of Civil War period. Models made for the United States Navy

What the Model Yachtsmen Are Doing

How to Use the Model Yacht Rating Rule

By JOHN O. BERG

The advent of the American Rating Rule for the classification of model yachts, as adopted by the Model Yacht Racing Association of America and many of the model yacht clubs, has caused considerable comment, and to those yachtsmen who are not familiar with the elements of yacht design the rule appears at first complex and difficult to apply.

The reason for this article is to make clear the application of the rule to those having some knowledge of the art of yacht design. Without that it would be difficult, if not impossible, to impart sufficient information to be of value. Unfortunately, many yachtsmen have not had the opportunity to study the art, others do not think the model yacht worthy of so much mental strain. It is from the latter gentlemen that the chief opposition to the change in measurement has been found. They prefer to build a model by the rule of thumb, and their product is usually as haphazard as the methods they employ. Furthermore, they miss the most interesting part of the work by neglecting to keep pace with the trend in larger vessels and by adhering to the old water line, or Seawanhaka rule, which has been discarded many years ago for large yachts as it produced freak designs and boats with unsatisfactory qualities.

The old water line sail area rule $\left(L = \frac{LWL + \sqrt{SA}}{2}\right)$ was adopted by the American Model Yacht Club in 1878, and has been in use until recently by most clubs. The reasons for its discontinuance by the more progressive organizations are in part the same as those responsible for the change in rule for large yachts. Particularly in the desire to eliminate freak designs do these reasons coincide, as the model, having a much greater factor of safety, particularly lends itself to unwholesome distortion.

It is generally conceded that the model must be treated in some respects as an individual structure, and for that reason some changes have to be made from the Universal Rule for full size yachts in order to govern the proper design of a model yacht. These changes have been made, and as the coming International Race has stimulated building so that a large number of boats is being designed and built, we will have, at the season's end, all the data and information required to correct, if need be, any undesirable feature in the American Model Rating Rule.

For the full text of the American Rating Rule (which need not be reprinted here) see YACHTING of July, 1921. The formula in the rule which produces the "rating" of a boat, is $.18 \frac{L \times \sqrt{SA}}{\sqrt[3]{D}}$, which reads, 18 per cent of the product of the length multiplied by the square root of the sail area, divided by the cube root of the displacement. The result of this formula gives the boat's rating. The rule states, also, that the factor (L) or racing length of the formula shall be found by first establishing what is called the quarter beam length (QBL) and comparing this with a percentage of the load water line length (LWL). This percentage of the LWL required is equal to one hundred minus the square root of the load water line length ($100 - \sqrt{LWL}$). Any excess of the QBL over this percentage of the LWL shall be divided by 2 and added to LWL to give the racing length, or factor L.

The rule states, further, that the displacement shall be the volume of displacement in cubic inches and that the cube root of this figure be used: That the sail area be limited to the ($LWL^2 \times 1.60$), and that the draught shall not exceed ($.32 \times LWL + 1.56$ inches) with a severe penalty for any excess in the two latter factors.

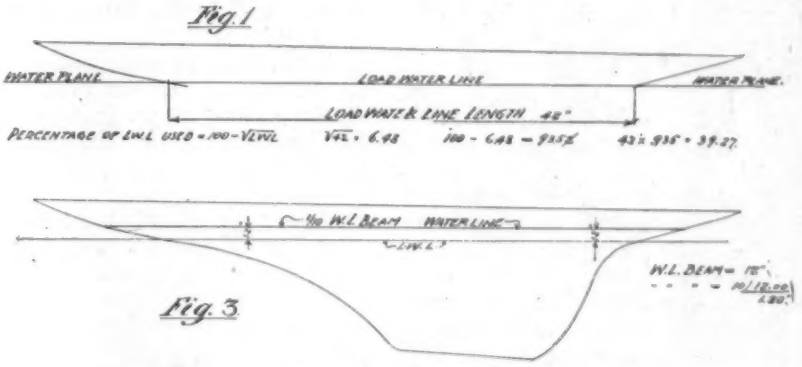
To explain the rule we will take an example of a conservative hull developed under the waterline rule so that the restraining influence of the QBL may be noted. This boat has very full lines in the after body, which produce a long Quarter Beam Length and, in consequence, a higher rating than if the after body were developed in harmony with the fore body, which is comparatively sharp.

Thus, it will be seen the QBL would produce a very heavy penalty in the scow type of vessel, which is the principal purpose for its existence in the rule. The true scow being a boat lacking in seaworthy qualities, and not a satisfactory all around type to encourage, the rule works to the disadvantage of that type.

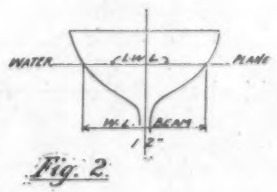
It is the writer's opinion that the model yacht requires fuller lines than would be best for a large yacht, particularly in the fore body, as the model loses somewhat, proportionately, in stability, because of her small size and proximity to the surface, where the water is in a more or less broken condition and, therefore, that the taking of a small penalty in this QB length, not exceeding one inch in class B, would be an advantage rather than a detriment.

The dimensions of the assumed craft we illustrate here are as follows: LWL, 42 inches; beam, 12.50 inches; displacement, 30 pounds; sail area, 2,800 square inches. Now let us take each factor separately to find the rating of this model under the rule.

To establish factor L we must first know the load water line



What the various terms in the measurement rule mean



length. As the load water line (*LWL*) is the line produced on a floating body by the surface or plane of the water, its length is the distance between the furthest forward and the furthest aft intersection of the vessel and the water plane, as in Fig. 1. On a model it is usually measured by floating the boat, when in racing trim, in a measuring tank, the distance apart of the intersections of the hull with the water plane being transferred to the edge of the tank by means of one straight edge and one T square. In this case the *LWL* measures 42 inches.

Other water lines parallel with the *LWL* are drawn in the plans by the naval architect to aid in fairing up the body and for use in making his calculations. They may be drawn in anywhere above or below the *LWL*. The rule states that we shall lay in a water line, at a distance equal to one-tenth the load water line beam, above the *LWL*.

This water line is known as the $\frac{1}{10}$ beam *WL*. To do this we must first know the water line beam of the model.

The beam as required in the rule is the greatest width of the vessel on the *LWL*, wherever it may be found. It is taken as shown in Fig. 2. We find it is 12.00 inches in this boat. So, if our beam is 12 inches then our 1/10 beam *WL* must be drawn in or established 1/10 × 12 inches, or 1.2 inches, above the *LWL*, as in Fig. 3.

A buttock is a line or plane laid in parallel to the vertical axis or centre line of the boat. It may be placed at any distance outboard of the vertical axis or centre line. Like water lines, the buttocks are used to fair up the body of the vessel. The rule calls for a buttock laid in at a distance from the centre line outboard, equal to ¼ of the water line beam, which in this case would be ¼ × 12 = 3 inches, as shown in Fig. 4. The quarter beam length will be the distance between the forward intersection and the after intersection of the 1/10 beam *WL* and the ¼ beam buttock. It is called the *QBL* and we find by measuring this distance to be 42.80 inches. (See Fig. 4.)

Now, the rule states that we must compare the *QBL* with a percentage of the *LWL* and that that percentage shall be equal to 100 — $\sqrt{LWL}$, so that $\sqrt{42}$ = 6.48, and 100 — 6.48 = 93.52, or we may say .935 per cent of 42.00 inches or 39.27 inches. The rule also states that any excess of the

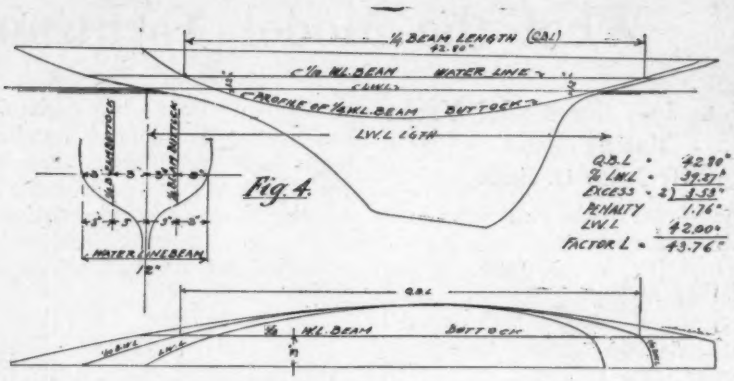


Fig. 4.

QBL above this percentage of the *LWL* shall be divided by 2 and added to the *LWL*. So we have

QBL = 42.80"
% *LWL* = 39.27

Excess = 2) 3.53

Penalty = 1.76

This penalty added to the *LWL* of 42 inches gives us the racing length or *L* in the equation equal to 43.76 inches.

Continuing, we must extract the square root of the sail area quantity, so $\sqrt{2800}$ = 53. (nearly) and we have for our formula $\frac{43.76 \times 53}{\quad}$.

There remains only the cube root of the volume of displacement to make our problem solvable.

The term displacement in naval architecture has reference to the volume or weight of the water pushed aside when a body is put into it. The weight of this volume of water will be exactly the same as the weight of the floating body. Therefore, if we wish to know the weight of displacement of a model being measured we weigh it in racing trim, and no alterations may be made to it thereafter without the consent of the judges until the race is over. Now, having the weight, say, in pounds, we may find the volume of water it will push aside by dividing the weight of the displacement by the weight of one cubic inch of water in which the race is to be sailed. Fresh water is computed at .036 pounds per cubic inch, sea water at .037 pounds. We find our model weighs 30 pounds exactly. $\frac{30}{.036}$ = 833.33 cubic inch volume of displacement. The cube root of 833.33 is sought and found as 9.3, and our problem may be solved and the rating of this craft established as .18 $\frac{43.76 \times 53}{9.3}$ = 44.9 rating.

This is a high rating for a boat of so short a water line length and is due mainly to the considerable *QB* length she incurs by her full after body and good sized sail plan, coupled with a normal displacement.

Here are the various classes adopted by the association under this rule. Many of the existing boats built under the old rule will be found to rate favorably in some one of these classes when they are measured, particularly if they have a normal, wholesome type of body.

55 inch, Class A. Not over 55 inches and over 46-inch rating.

46 inch, Class B. Not over 46 inches and over 38-inch rating.

38 inch, Class C. Not over 38 inches and over 31-inch rating.

31 inch, Class D. Not over 31 inches and over 25-inch rating.

Annual Meeting Montclair Model Y. C.

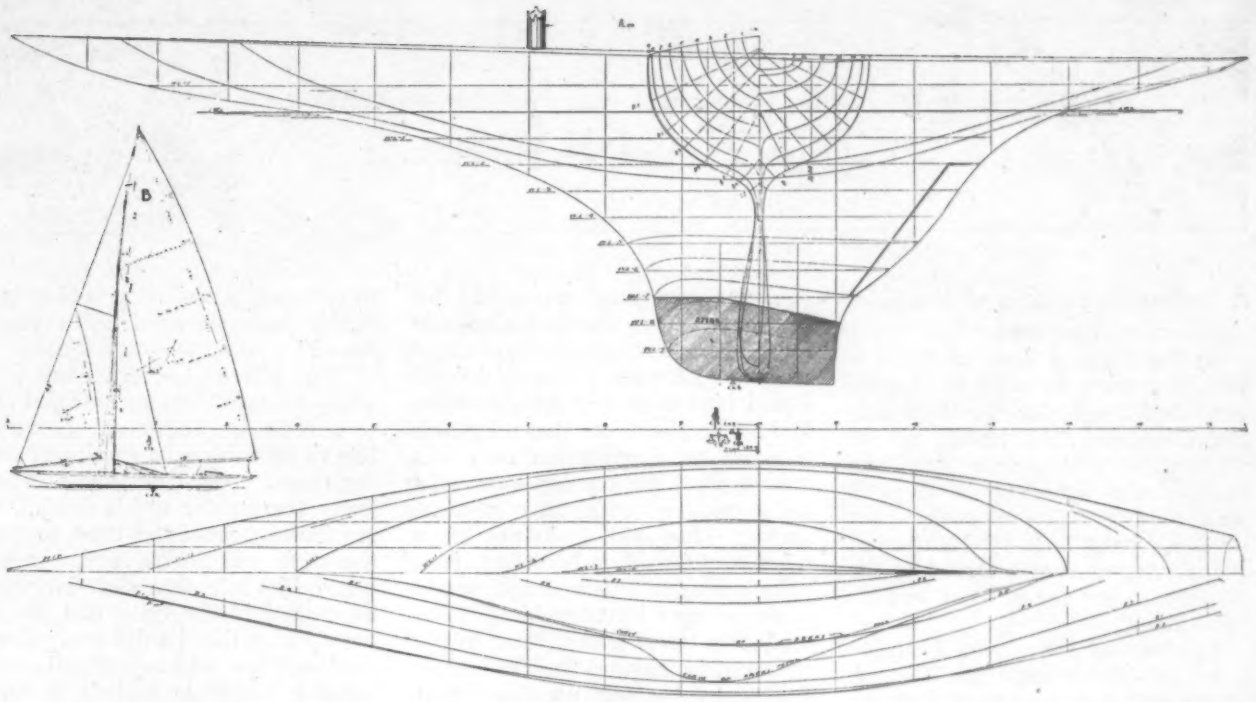
On January 20 the Montclair Model Yacht Club held its first annual dinner at Montclair, N. J., some thirty members and guests being present. After the dinner the manual training shops of the Montclair High School were inspected, as there are unusual facilities here for building both sail and power models and many of the students are taking up the making of models.

The club is going to have at least three new boats for the international race next June. Two of these are from designs by Wm. Atkin and the third is for R. Johnson, from his own designs.

After the dinner the annual meeting was held and officers were elected for the year 1922.

Detroit Model Y. C. Joins Racing Association

At the last meeting of the Model Yacht Racing Association of America, the Detroit Model Yacht Club of Detroit, Mich., was elected to membership in the association. A letter from Commodore Bash of the club inferred that this organization might also have a boat in



Lines of Class B model yacht *Jibwanasi*, built under the new Model Yacht Rating Rules. This is the class in which the International Race with England will be sailed this summer

the international elimination races next June. The club is "going strong," with some forty odd members (although less than a year old) and sailing models on the waters around Detroit is becoming very popular.

A Class "B" Model Yacht

In order to illustrate the type of boat which may be considered of normal design under the American Model Rating Rule, the lines of *Jibwanasi* are shown here. These lines will produce a boat which will act satisfactorily for outside work, as well as on lakes and ponds where the winds are somewhat less steady. The calculations are on a salt water basis, and if the same amount of ballast is put on the keel as is indicated on the plan, then, if the model is used in fresh water, her water line length will be about .75 of an inch longer and her draught about .2 of an inch greater. Her rating, however, will not change sufficiently to be of any importance, so that one who follows these plans with reasonable accuracy may be assured that the model will rate in Class "B" of the Rating Rule.

The sail area is moderate and should show up well for general use. It is a trifle large for outside sailing in early spring or late fall, perhaps, when the winds are strong. The jib-headed or "Marconi" rig is shown because of its simplicity and its advantages for model use. A gaff-headed rig may be substituted if desired.

Jibwanasi was built and tested to substantiate in the designer's mind his ideas on the changes from the Universal Rule which have been incorporated in the American Model Rating Rule before this rule was put forward for the consideration of the Rules Committee of the Central Park Model Yacht Club and that of the Model Yacht Racing Association of America.

Her dimensions are as follows: Length over all, 70 inches; length, water line, 43½ inches; beam, 12½ inches; draught, 15.3 inches; sail area, 2,865 square inches; displacement, 32.8 pounds. She was designed by J. O. Berg.

Prospect Park Model Y. C. Elects Officers

The Prospect Park Model Yacht Club, of Brooklyn, N. Y., held its Annual General Meeting on December 5th, 1921, the principal feature of the meeting being the election of officers for the coming year.

The following is the ticket elected:

Commodore, E. A. Bull; Vice Commodore, F. P. Wright; Rear Commodore, Captain H. H. Stilling; Measurer, J. L. Wilson; Treasurer, F. Meinertz; Secretary, R. W. Barton.

Chairman of Regatta Committee, R. W. Barton.

Trustees, Captain H. H. Stilling, F. H. Tucker, J. B. Ketcham.

The Secretary's report gave a complete resumé of the club's work for the past season. One of the important racing events of the year was the winning of the Eagle Trophy by Mr. E. A. Bull with the *Wetona* at Gravesend Bay on Decoration Day.

Eight new members joined the club during the year.

The results of the Weekly Point Races and Special Class Races were announced at this meeting. They were as follows:

POINT RACES

Owner Yacht	Points	Pos.
E. A. Bull, *Wetona*	233	1
F. Meinertz, *Amelia*	211	2
C. R. Daniels, *Ruth*	142	3
F. P. Wright, *Arapahoe*	140	4
F. Tucker, *Dorothy*	139	5
Lieut. E. S. Tucker, *Yankee Girl*	103	6
J. B. Ketcham, *Gadfly*	88	7

FIRST CLASS MODELS

F. P. Wright, *Shawnee Chief*	1
F. Tucker, *Emerald*	2
J. B. Ketcham, *Gee Whiz*	3
R. W. Barton, *Lorna Doone* / C. E. Wauker, *Ripple II*	Tied

SECOND CLASS

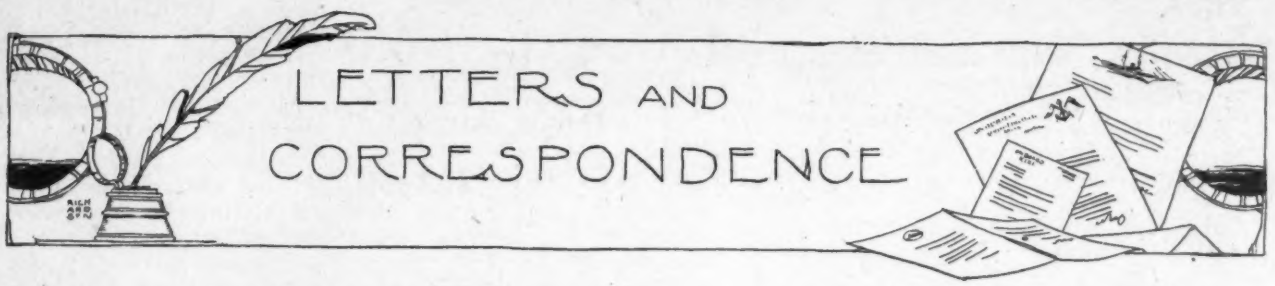
F. P. Wright, *Arapahoe*	1
J. B. Ketcham, *Gadfly* / F. Meinertz, *Hilma* / F. Tucker, *Dorothy*	Tied for Second
Lieut. E. S. Tucker, *Yankee Girl*	3

THIRD CLASS

F. Meinertz, *Amelia*	1
E. A. Bull, *Wetona*	2
W. Windeiman, *Iroquoise*	3
F. C. Poggenberg, *Kelpie* / H. P. Taylor, *Grace H*	Tied

SCHOONERS

F. Meinertz, *Fairwind*	1
J. B. Ketcham, *Elsie* / H. P. Taylor, *Orienta* / F. C. Poggenberg	Tied for Second
F. P. Wright, *Comet* / Capt. H. Stilling, *Vanitie*	Tied



A Different Version of the Kiel Incident

In the January issue of YACHTING you refer to a book recently published by Major B. Heckstall-Smith entitled "All Hands on the Main Sheet" and quote a story from that volume regarding the German Kaiser's yacht *Meteor* being caught on the wrong tack by Morton F. Plant's *Ingomar,* and forced by the latter, who had the right of way, to come about.

In the story as quoted Major Heckstall-Smith states that *Meteor,* on the port tack, would not give way and the two boats were so close that a collision was inevitable. Barr, at the wheel of *Ingomar,* called to C. L. F. Robinson what he should do and was told to hold on. "I prepared for a deuce of a crash," says Major Smith in the story. "I heard old Morton F. Plant shout to his friend C. L. F., who was representing him: 'By God! Charlie, you're the boy. I'll give way to no man.' At that moment the *Meteor's* helm was put down. Our bowsprit was within three feet of her fore-rigging. Our helm was jammed hard down also, as quick as ever the wheel would turn. Both vessels ranged alongside of one another as they shot head to wind."

The above story does not agree with the story told me by the late Commodore Plant some years ago on the piazza of the Indian Harbor Yacht Club at Greenwich, Conn. One day, early in the Spring, I was at Greenwich and stopped at the yacht club, where I found Commodore and Mrs. Plant. Commodore Plant told me he was on his way to New London and had stopped for lunch. In the course of our conversation I asked the Commodore what kind of a sport the Kaiser was. Commodore Plant said: "I can best answer your question by telling of a couple of races I sailed against the *Meteor* with the *Ingomar.*"

He then went on to say: "We were sailing a race against the *Meteor* and others and were close hauled on the starboard tack. The *Meteor,* sailed by the Kaiser, was on the port tack and as we approached each other it became evident that if *Ingomar* continued we would hit *Meteor.* I was standing alongside the wheel when Captain Barr asked me what he wished him to do and I told him to go about. After we had gone about on the port tack I asked an Englishman who was sailing with me on *Ingomar* what he would do under the circumstances. He said, I do not know what they would do here, but if we were sailing in England against the King we would protest him. I immediately told Captain Barr to put up a protest flag. After the protest flag had been put up the Kaiser asked his captain what it meant and his captain seemed averse to answering, but finally when the Kaiser insisted, said that the *Meteor* had room to cross. The Kaiser then asked who was in the right, and his captain said *Ingomar* had right of way, but still insisted that *Meteor* could have cleared *Ingomar* if both yachts had held their course. On learning this the Kaiser immediately luffed up in the wind and withdrew from the race. When we picked up our moorings after the race we found a cutter from the Kaiser's yacht waiting with an officer on board with an apology from the Kaiser."

The other incident Commodore Plant related happened in another race at the same place. As they were approaching a turning mark Captain Barr, on looking back, found that the other contestants were turning a different mark and asked if *Ingomar* were sailing the proper course. "I consulted the sailing instructions," said the Commodore, "and said that so far as I could understand them that we were on the right course. A German officer who was on board representing the Kaiser asked to see the instructions and after reading them called my attention to some small print at the bottom which, in effect, said the Regatta Committee reserved the right to change the course after the start, and that this is what the Committee had done. On returning to my mooring I again heard from the Kaiser and was informed that he placed the responsibility on the German officer on board *Ingomar* and, later, he transferred him to an outlying district, which evidently was intended as a reprimand."

The above conversation with Commodore Plant is, so far as I can remember it, verbatim. I would like to take this opportunity of saying that I knew Commodore Plant many years prior to his death, and particularly when he used to race the cabin cat *Nellie,* and I never heard him use any such language as quoted in the book and am of the opinion that he did not. Commodore Plant was a good sailor and handler of boats and it is very doubtful whether he would delegate any authority in a race to one of his guests, nor do I think that Captain Barr would take any orders except from the owner. I base the latter opinion from observation in races sailed with Captain Barr.

GEO. C. GARTLAND

A Chance for International Racing with Sweden

Arlington, N. J.

Editor, YACHTING:

Kindly send me the rules which will govern the design of model yachts to enter the international trials next year. I understand Mr. Daniel's challenge has now been accepted.

I also understand that Canada has again challenged for the International Sailing Canoe Trophy, held by Leo Friede, but am not sure of the information.

It may interest you that during the summer of 1923 the City of Gothenburg, Sweden, will celebrate its three hundredth anniversary. Great preparations are being made for the various exhibits, and an international yachting regatta will be one of the features. It is very likely that the Six Meter Class will be the most prominent one, as it was before the war. It seems that American yacht clubs should send representatives to this regatta, especially as direct steamship communications between New York and Gothenburg makes it very easy to ship boats.

HILDING FROLING.

Sea Chest---and How to Build Her

A Small Cruiser for the Man of Limited Means

By DWIGHT S. SIMPSON, M. E.

PART II—CONSTRUCTION

SOMEWHERE we have spoken of power as a prime necessity in the week-enders' craft and as yet there is no sign of it aboard, but if you lift up that hatch in the cockpit floor you will find the engine. In fact you can take it right out and look at it. In a little boat of this size a fixed engine is a nuisance. It takes valuable room in the cabin and heats up the whole ship, or else becomes majority stockholder in the cockpit, which is our living room. Incidentally its propeller doesn't help the sailing qualities of the boat in the least.

On the other hand the outboard motor is just as reliable, can be stowed in space not used for anything else, can be shipped in a few moments and has plenty of power. Also, you can put it on the dinghy if you desire a power tender, or lend it to a friend.

Well, we've looked her over and I hope you like her. To quote one critic: "That's my idea of a boat for a couple of fellows. You can play around the bay all day without any work, and if you want to go anywhere—why, you just go."

It can be assumed that by this time you have studied the various drawings of *Sea Chest* published in the January issue and have made up your mind whether or not she is the kind of a boat you want and whether you will build her. If not, said drawings are possibly worth another look.

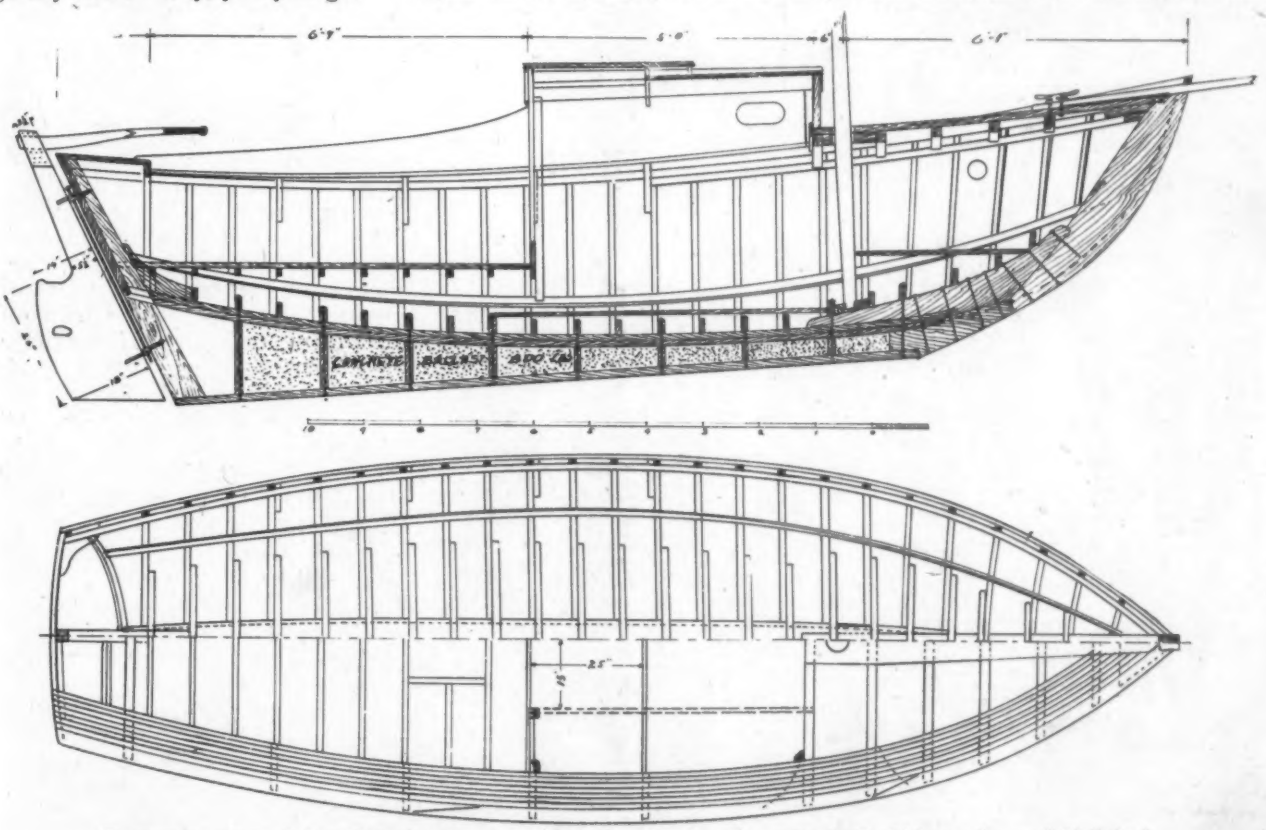
It is with some satisfaction that we can announce that at least two have already been started, and maybe some day we can all get together and have a race.

The *Chest* can, of course, be made for you by any small boat-builder for a reasonable sum and you will have a good boat, but you will have missed a lot of fun and can never have that absolute pride of possession that is possible if she is a thing of your own creation.

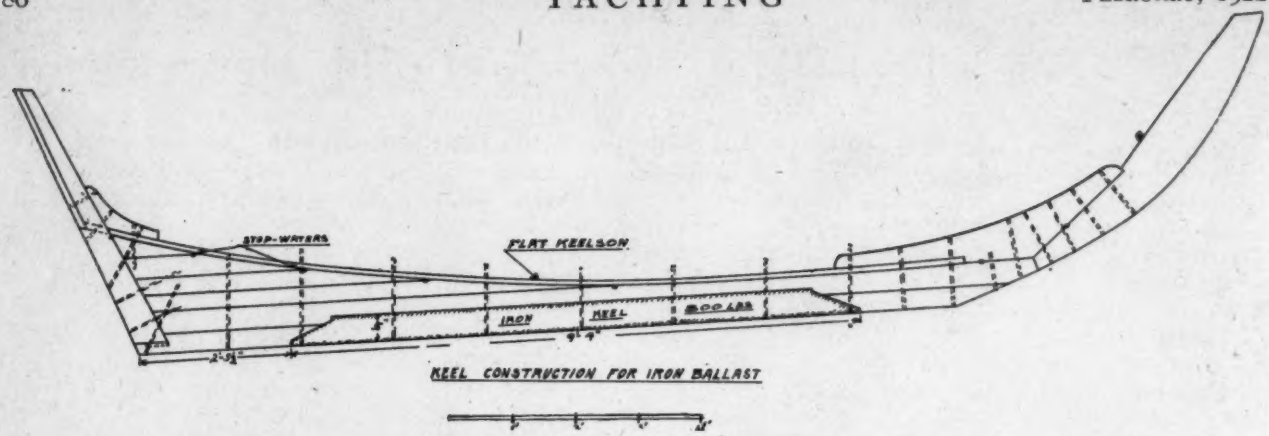
One way out, saving most of the work on the one hand and some money and fun on the other, is to have the hull and exterior joiner work done for you and then rig and fit her yourself. This scheme has some advantages over getting the boat complete in that your fancied requirements or experience may be different from mine, or the editor's, or Tom Jones's or John Doe's, and after you have roamed around the empty interior of the ship and knocked your head against its various protuberances, you can visualize an arrangement more suited to your individual self. If you have no experience behind you, better take my word for it and accept the arrangement given, as the dreams of many "old timers" are in it.

To get the full possibilities, economical and recreational, out of *Sea Chest,* by all means build her yourself. I'll not go so far as to say that any man who can drive a nail can make a boat, but the average "handy-man-about-the-house" or the product of our numerous manual training schools can do it —nicely.

A knock-down frame, of which more anon, is the nicest and easiest way to start, but if the frame maker is too far way, start with the raw material. The big thing is to start. The finish is just a matter of time. Incidentally, if you have to buy your materials, get them sawed out, supply moulds, etc., it is nearly the same as buying a frame. The difference in cost is not so much



Construction plans of *Sea Chest,* the upper one showing construction of concrete keel which can be used if desired



KEEL CONSTRUCTION FOR IRON BALLAST

as you would think at first.

The first step after deciding to build is to find a place in which to do it. A space 12 feet by 25 feet is comfortably small enough for your shipyard. Get it under cover if possible, but this is not necessary. It seems unnecessary to choose a place from which the finished boat must be hoisted over a ten-story building or through the front of a house (removed for the purpose), yet these things have been done.

Get as close to home as possible, to save time back and forth, yet as near the water as possible to save on final transportation. If it's a choice of the two keep close to home —she is only launched once, but you will make many trips in the building. Some means of lighting must be provided, as much of your work is likely to be done at night.

In other words plan your campaign before you start—how you are going to get to and from the job; where you are going to keep your tools, or how you are going to transport them if you cannot keep them on the work; where and how you are going to keep your lumber; how you are going to get your boat in the water when finished; etc. A few moments spent in this way now may save hours and DOLLARS in the end.

In this planning it is worth noting that *Sea Chest* is 20 feet long, 6 feet 6 inches wide, weighs approximately (in launching condition) 3,000 pounds, and will go through an opening 6 feet 8 inches wide and 6 feet high (or if the house is put on afterwards, 5 feet high), allowing for rollers on which to move her.

If you are so unfortunate as to have no tools, then their cost will have to be added to the cost of the boat, so let us consider what is absolutely necessary.

If you start with a frame you will need:

1 cross cut saw 20 inches, or longer.

1 rip saw 20 inches, or longer.

1 plane, 14 inches to 20 inches long.

1 block plane.

2 planes, 8 inches long.

1 claw hammer, 14 to 16 ounces.

1 ball pein hammer, 10 to 12 ounces.

1 draw shave.

1 square, 20 inches.

2 squares, 6 inch try.

1 carpenter's bevel.

1 level, 12 inches to 16 inches.

1 plum bob and line.

1 brace (ratchet if possible), bitts to be bought as needed if you do not care to get a set.

2 screwdriver bitts, small and medium, for brace.

2 hand screwdrivers, small and medium.

2 chisels, ½ inch and 1 inch, if you do not care to buy a set.

12 6-inch iron clamps—more if you can get them.

Later you will need a caulking iron, paint brushes and such rigging tools as you do not make.

A 3 inch or 3½ inch vice which may be iron or wood (get an iron screw for this), attached to your bench, which can be made from one plank well supported in a level position. It should be not less than eight feet long.

The family axe will come in handy for a sledge and ditto hatchet for rough cutting. See that its edge is ground with a long straight V in cross section. A rounded V is as bad on a hatchet as on a razor. The joiner work will be improved if you have a back saw, nail sets and other refinements. A hacksaw and a couple of files will help to cut and trim off the metal work and, of course, a cabinet scraper and much sandpaper, from coarse to fine.

If you start with the raw material your saws can conveniently be larger and you will need a 1½ inch framing chisel and mallet, also three or four long clamps which you can probably borrow for the few days they will be in use.

All in all, the tool question can probably be covered with a twenty dollar bill and you will have them for the next boat.

The next step is to order the materials, and for this purpose they are listed in the accompanying table, which is self explanatory.

It is necessary now to decide on

20ft AUXILIARY CRUISER
"Sea Chest"
OFFSETS

	STATIONS	BOW	0	1	2	3	4	5	6	7	8	9	10	T
HEIGHTS	RAIL	6-0-0	5-7-0	5-2-5	4-11-3	4-8-5	4-6-3	4-4-3	4-3-0	4-2-3	4-2-2	4-2-6	4-3-7	4-7-4
	SHEER	5-8-0	5-3-7	5-0-4	4-9-2	4-6-6	4-4-6	4-3-1	4-1-6	4-0-6	4-0-6	4-1-3	4-2-6	4-3-3
	RABBET	—	2-8-4	1-9-0	1-4-6	1-3-0	1-1-7	1-1-3	1-1-3	1-2-0	1-4-0	1-7-1	—	1-11-0
	KEEL	6-0-0	2-6-0	1-5-4	0-11-0	←			STRAIGHT				→	0-0-0
HALF-BREADTHS	SHEER	0-1-4	1-5-0	2-3-2	2-9-3	3-0-7	3-2-5	3-3-0	3-2-6	3-1-2	2-10-4	2-6-3	2-1-0	1-10-3
	W.L. 7	—	0-11-4	1-11-3	2-7-3	3-0-0	3-2-1	3-2-7	—	—	—	—	—	—
	6	—	0-8-3	1-9-0	2-5-3	2-10-7	3-1-3	3-2-2	3-2-3	3-0-4	2-7-7	2-5-1	—	1-9-5
	5	—	0-4-4	1-6-0	2-3-0	2-9-1	3-0-3	3-1-3	3-1-4	2-11-4	2-8-6	2-3-5	—	1-7-7
	L.W.L.	—	0-0-4	1-1-4	1-11-4	2-6-2	2-10-2	3-0-0	2-11-6	2-10-0	2-6-2	2-0-0	1-3-7	1-3-7
	3	—	—	0-9-4	1-7-7	2-3-1	2-7-4	2-9-2	2-9-1	2-6-5	2-2-2	1-5-6	—	0-8-7
	2	—	—	0-3-0	1-2-0	1-9-1	2-1-4	2-3-5	2-3-4	2-0-4	1-7-0	0-10-6	—	—
	1	—	—	—	0-5-6	0-11-6	1-4-2	1-6-0	1-6-2	1-3-2	0-9-5	—	—	—
	RABBET	0-1-4	0-1-4	0-1-4	0-2-1	0-3-0	0-3-4	0-3-4	0-3-4	0-3-4	0-3-2	0-2-2	—	0-1-0
	KEEL	—	0-0-4	0-0-4	0-1-0	0-1-7	0-2-4	0-2-7	0-2-7	0-2-4	0-2-0	0-1-2	—	0-0-4
	DIAG. A	—	0-10-3	1-9-6	2-5-7	2-11-2	3-2-11	3-3-4	3-3-4	3-1-5	2-10-6	2-6-2	—	1-11-4
	B	—	0-7-3	1-6-3	2-1-0	2-4-7	2-6-6	2-7-5	2-7-5	2-6-2	2-3-6	1-11-7	—	1-7-1
	C	—	0-0-4	0-9-0	1-2-0	1-4-5	1-6-3	1-7-0	1-7-0	1-6-0	1-3-7	1-0-4	—	0-7-4

ALL DIMENSIONS ABOVE GIVEN IN FEET-INCHES-AND EIGHTHS.

the kind of keel you are going to use. *Sea Chest* was originally designed when the cost of iron was mixed up with the copper prices and the box keel with its cheap filling of cement and scrap iron was intended to get around the prohibitive cost of the orthodox variety. It will work well (similar keels have been in use for some years) but iron is down now and the boat will undoubtedly have a greater sale value with the usual thing under her. If you use a knocked-down frame pay no attention to the section A, as these parts will be furnished ready to go in place.

The planking material should be bought as wide as possible, as when two or more planks can be ripped from one board there will be less waste. It is also possible to buy the planking direct from the frame maker, cut to shape or nearly so, thus saving a great deal of labor at no great additional cost.

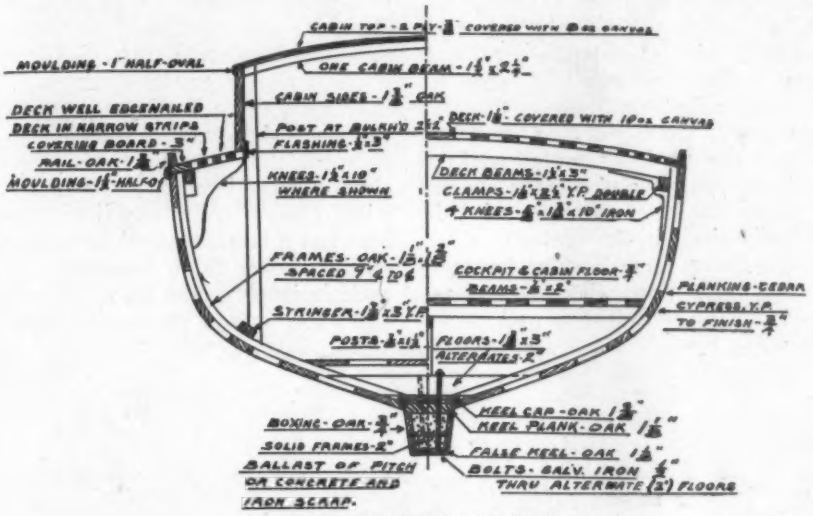
Unless you are a long way from the mill it is well to buy the material as you need it, say, first, the frame stuff, then the planking, etc. This saves cluttering up your space with stuff you won't need for a while and—more important—it stretches the financial investment over the period of building the boat.

Laying Down and Patterns

I am not going to describe the method of laying down the boat full size from the drawings. If you have ever made a boat, canoe or even a model you have already done the job and can lay down and pick up the patterns accurately.

If you haven't, you had better not experiment on this boat. The mechanical part is simple enough, almost without explanation, but the knowledge of when to use and when not to use the points you lay down comes only by experience, or when you have the boat set up only to find some point was wrong when it is too late to change it. So, if you have never tried it I strongly advise you to get a set of full-size paper patterns. It is only necessary to paste these to some ⅜ inch or ½ inch boards and saw them out and smooth up. These patterns will give you the shape of the moulds—stem, transom, knees, floor timbers, deck beams and house sides. In ordering, specify the kind of keel you are going to use.

Assume now that you have the various parts on the ground and cut to pattern. Make a start with stem and knee. The "faying" surfaces of the joint (those edges that come together to make the joint) must be smoothed up straight and square to sides of the wood. A plane will do most of the work but a chisel must be used where the joints end in a jog or notch.


CABIN TOP - 3 PLY - ⅜ COVERED WITH #8 oz CANVAS
MOULDING - 1" HALF-OVAL
ONE CABIN BEAM - 1½" x 2½"
CABIN SIDES - 1⅛" OAK
DECK WELL EDGENAILED
DECK IN NARROW STRIPS
COVERING BOARD - 3"
RAIL - OAK - 1⅛"
MOULDING - 1½" HALF-OVAL
POST AT BWD'H'D 2½"
DECK - ⅝" - COVERED WITH 10oz CANVAS
FLASHING - ⅛"
KNEES - 1½" x 10" WHERE SHOWN
DECK BEAMS - 1½" x 3"
CLAMPS - 1⅝" x 2½" Y.P. DOUBLE
+ KNEES - ⅝" x 1½" x 10" IRON
FRAMES - OAK - 1½" x 1½"
SPACED 7" C to C
COCKPIT & CABIN FLOOR - ¾"
BEAMS - 6" x 12"
PLANKING - CEDAR
CYPRESS, Y.P.
TO FINISH - ¾"
STRINGER - 1⅛" x 3½" Y.P.
POSTS - 1⅛" x 11½"
FLOORS - 1⅛" x 3"
ALTERNATES - 2"
KEEL CAP - OAK 1½"
KEEL PLANK - OAK 1½"
BOXING - OAK - ¾"
SOLID FRAMES - 2"
FALSE KEEL - OAK 1½"
BOLTS - GALV. IRON ⅝"
THRU ALTERNATE (2") FLOORS
BALLAST OF PITCH OR CONCRETE AND IRON SCRAP.
CONSTRUCTION SECTION

If you are using the iron keel construction, plane and fit up the joints on all the pieces. The long straight joints have probably been planed true enough at the mill. The keel has a cap making a T section and the joint between keel and cap must be good. As it is curved it must be worked out by hand, but if it can be band sawed at the mill you will save a lot of time. Clamp the cap in place from time to time and do not call the job done until the cap and keel come together their entire length.

The stern post goes clear to the deck and it will be well to leave it a few inches longer for a while. The stern end of the cap must be notched out to let the post through and the jog on the after side of the post trued up to take the transom. The mortise and tenon joint between the bottom of stern post and keel is not necessary but makes a stronger job and will repay the time and trouble spent on it.

Now, clamp the whole keel together on its side and lay the patterns on it to make sure all is in proper shape. It should be blocked up on horses to a good working height because, if everything is correct, you can now bore the holes for bolting up. You are using ⅝-inch rod, and if it happens to be "hot galvanized" a ⅝-inch bitt is correct, otherwise use a 9/16-inch bitt as there must be a good driving fit. It will doubtless be necessary to get a ship auger or car bitt as the regular variety is not long enough. Start the holes from the outside and bore in about ⅝ inch with a bitt large enough to take the washers. Then finish with bolt size all the way through. Do not bore for the bolts which hold the iron keel but put in two or three light bolts to hold the cap in place.

When all the holes are ready take off the clamps and paint all the joints with a good thick paint and immediately clamp up again and drive the bolts. Cutting each rod an inch or two longer than the hole, put a washer in place with the rounded, countersink side out, and start the bolt. The axe will be needed to expedite matters. When the bolt is within an inch or so of being in, stop and head it up with light blows of the ball pein hammer until the head looks as if it would fill the countersink. Next, lift the washer and put under it a "grommet," made of cotton dipped in white or red lead; and drive the bolt home—hard. Slip a washer over the other end, cut the bolt off about a quarter inch above it and rivet up a good head, drawing everything tight. Get your next-door neighbor, who is sure to be there watching you, to hold the axe on the other end of the bolt so that you make a good tight job of it.

Drift bolts, as in the after deadwood, should have the hole 1/16 inch smaller but full depth. Use a washer and head up the driving end.

Fasten the cap to keel with two 20d nails between floors. The location of floors and frame should have been marked from the patterns. Keep clear of them. Put a smaller nail on each side into the post. When all the bolts are in you can take off the clamps and consider the first big job behind you. Take a photo if you like.

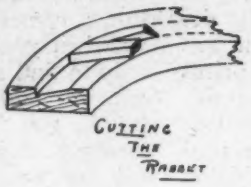
It is now about time to make the

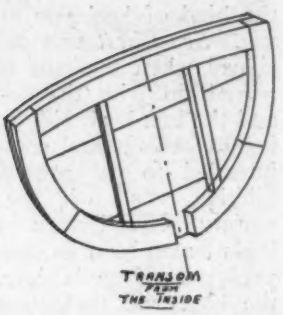
pattern for the iron keel. It could have been made earlier if you felt that way. Make it in box form or of planks nailed solidly together and just the shape that it is to finish, remembering that iron shrinks from the mould in cooling about ⅛ inch per foot, and make your pattern that much larger proportionally in all directions. The jog in the keel is not to be finished until the iron has come from the foundry. The bolt holes should be drilled but it is next to impossible to do this yourself and possibly the foundry can't, so they may have to be cast in. Consult your foundryman but in either case don't forget the countersink for the bolt heads.

While you are waiting for the foundry you can cut the rabbet in keel and stem. This is not an animal, but a notch cut along the parts of the keel to receive and protect the ends of the planks and make a smooth job on the outside of the boat. When properly drawn it is represented by three lines—the "rabbet" proper, or junction of the outer surface of plank and face of stem or keel; the bearding line, the junction of inner surface of plank and face of stem or keel; and the back rabbet, the inner corner of plank ends. In practice only the rabbet and bearding lines are used. They are given in the drawings and patterns and you have checked them if you have laid down the boat. See that they are drawn on both sides of the stem.

Then get a small piece of the planking, your big chisels and the mallet. Begin at the stem head and cut a notch from bearding line to rabbet line in such shape that when the piece of planking is laid in the notch its inner surface touches the bearding line and its outer surface at the edge touches the rabbet line and comes flush with the face of the stem. Carry the job right on down the stem, noticing that the 2 lines vary in distance apart and that the angle of the plank to stem varies. This is, of course, correct, as a glance at the waterlines and sections will show. It is best to leave the notch a little shallow to be finished when actually planking the boat, as the angle may have to be changed a little. The bevel on keel and cap can also be left until that time.

After both sides of the stem have been rabbeted, run a centerline down the forward edge of it and another line 7/16 inch each side of it. The sides of the stem must now be beveled off from rabbet line to the lines just drawn on the face, leaving the full thickness for six inches below the sheer line but only ⅞ inch wide below that. The lower part cannot, of course, be beveled clear to the rabbet line but to a line touching the rabbet line and parallel to the face.





The transom or sternboard is made of ¾-inch oak, using as few pieces as possible. The joints can run in any direction but the professional would keep them parallel to the waterline. Make them tight on the inside but slightly open on the outside. As end grain makes very poor holding for nails the transom is reinforced all around by strips of oak 1¼ inches thick and 3 inches wide sawed to shape, and fastened with screws. Be sure to let these pieces project beyond the transom to allow working the bevel so that the planking can lay well up on both transom and reinforcement. The approximate amount of this bevel is given in the pattern.

The transom can now be fastened to the stern post with big screws, taking care that it fits well down in the notch and that the centerlines on transom and sternpost coincide.

(To be continued)

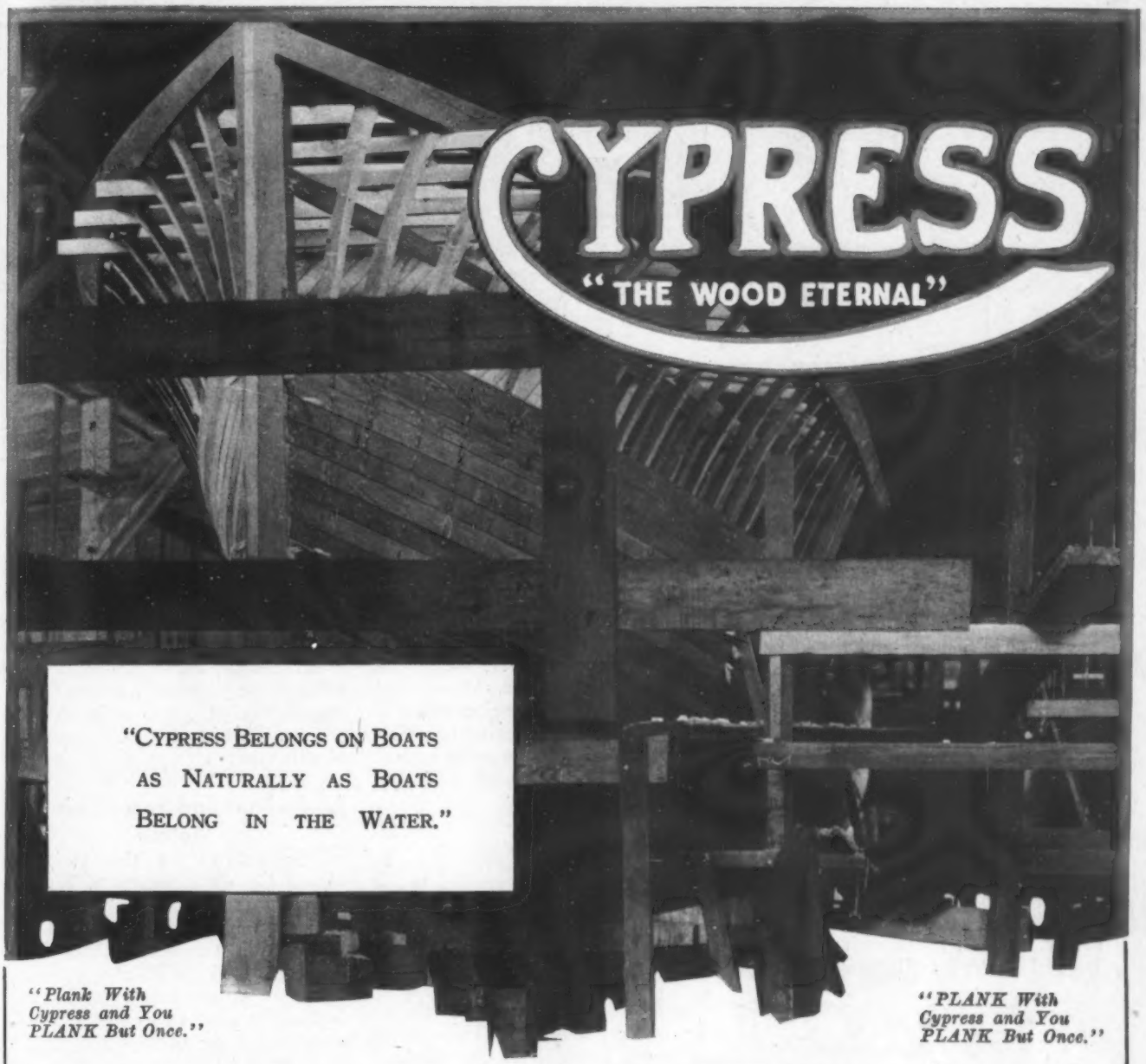
Greenport Boats at the Show

One of the features of the exhibit of boats at the New York Motor Boat Show is that of the Greenport Basin & Construction Co., who show two very handsome craft, the product of their Greenport yard.

One of these boats is a 28-foot runabout, designed by the company to meet the demand for a high-class, able and seaworthy boat that will go anywhere at any time. This boat has a large, watertight cockpit, with a shelter cabin forward. The cockpit is protected by an awning stretched over a removable frame.

Bill of Material for Sea Chest

	SECTION A		
	Concrete Keel.		
False Keel	1 piece	White Oak	1¼" x 6" x 14 Ft.
Keel	1 "	" "	1¼" x 7" x 16 "
Frames	1 "	" "	2 " x 6" x 5 "
Boxing	3 "	" "	¾" x 9" x 14 "
Cap	1 "	" "	1½" x 9" x 16 "
Stem, Knee, Fore Foot, Stern Knee	1 "	" "	3 " x 11" x 10 "
Stern Post	1 "	" "	3 " x 6" x 5 "
	For Iron Keel substitute for First three items above		
	1 piece	White Oak	4 " x 6 " x 8 Ft
	2 "	" "	4 " x 6 " x 14 "
Transom	1 "	" "	⅝" x 9 " x 12 "
	1 "	" "	1½" x 8 " x 8 "
Floors	3 "	" "	1½" x 3 " x 14 "
	2 "	" "	2 " x 3 " x 12 "
Frames	40 "	" "	1⅛" x 1⅜" x 5 "
Stringers	2 "	Yellow Pine	2 " x 3 " x 20 "
Clamps	2 "	" "	2¼" x 2½" x 14 "
	4 "	" "	1¼" x 2½" x 12 "
Deck Beams, Deck Knees	3 "	White Oak	1½" x 9 " x 7 "
Sheer Strake	2 "	Yellow Pine	¾" x 9 " x 22 "
	SECTION B.		
Rudder	1 piece	White Oak	1⅛" x 10 " x 8 Ft.
Planking	4 "	Cypress	⅞" x 12 " x 14 "
	2 "	"	⅞" x 12 " x 16 "
	6 "	"	⅞" x 12 " x 8 "
	6 "	"	⅞" x 8 " x 16 "
	4 "	"	⅞" x 12 " x 12 "
Decking	1 "	White Oak	1⅛" x 9 " x 6 "
	2 "	" "	1⅛" x 9 " x 8 "
	1 "	" "	1⅛" x 10 " x 7 "
	10 "	Cypress	1⅛" x 1⅛" x 14 "
	10 "	"	1⅛" x 1⅛" x 8 "
Decking	3 "	"	1⅛" x 4 " x 16 "
Cabin Side	2 "	White Oak	1¾" x 14 " x 12 "
	1 "	" "	1¾" x 14 " x 4"6"
Cabin Posts	2 "	" "	2 " x 2 " x 4 "
	2 "	" "	3 " x 3 " x 14 In
	Cabin & Cockpit.		
Floor Beams	14 piece	Yellow Pine	⅞" x 2 " x 6 Ft.
Flooring	75 feet	Cypress or Pine	¾"—T & G Flooring
Cabin Roof	50 "	" "	⅜"— " Ceiling
Cabin Bulkhead	2 piece	" "	1½" x 5 " x 7 Ft.
	4 "	" "	1½" x 3 " x 3 "
	15 feet	Cypress	¾"—T & G Flooring
Interior Joiner Work	100 "	Cypress or Pine	¾" x 6 " T & G Fl.
Decks	1 piece	10 oz. Canvas	80" x 20 Ft.
	1 "	8 oz. "	60 " x 6 "
	FASTENINGS.		
Keel	25 feet	⅝" galvanized rod.	
	40 "	¾" clinch rings.	
Planking	10 gross	1¼" No. 8 galvanized screws	
Deck and Miscellaneous	5 lbs.	8d galvanized wire nails	



"Plank With Cypress and You PLANK But Once."

"PLANK With Cypress and You PLANK But Once."

"Young Mariners Should Learn What All Old Mariners Know"

namely

Cypress is probably less affected by the action of water than any other wood.
(It was born and raised in water.)

All-heart Cypress practically refuses to rot, below the waterline, or above it, or betwixt-and-between, where air and water meet and overlap perpetually.

(It's the wet-and-dry action that plays the deuce with most woods. "Cypress is in a class by itself," say boatmen who know.)

Cypress boats don't need replanking in a lifetime or two.

Why not avoid the ticklish and expensive job of replanking by using "The wood Eternal" at first?

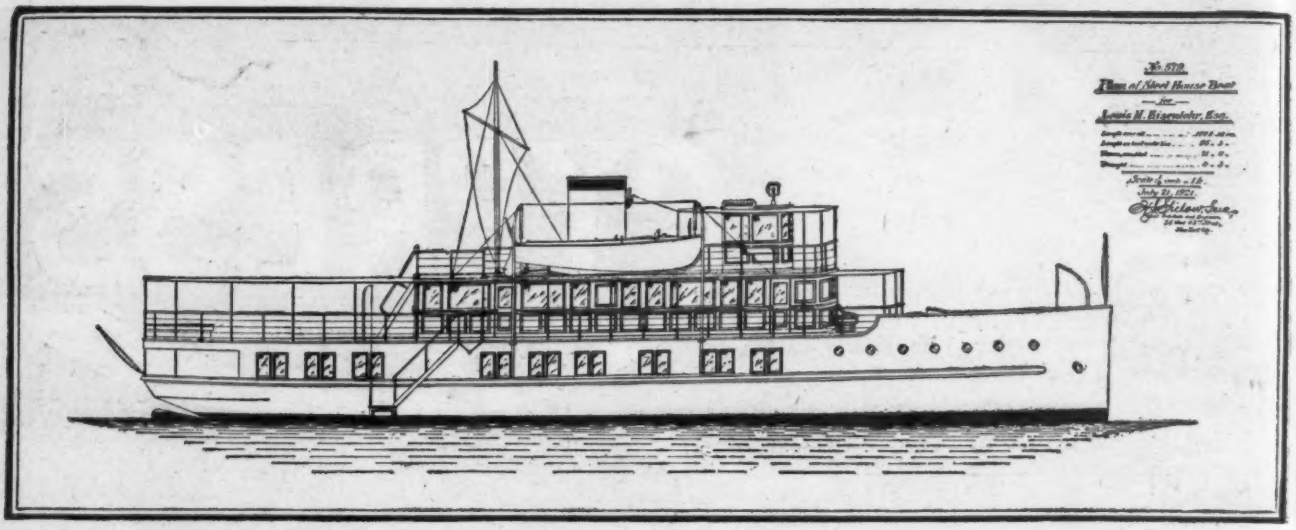
Volume 19 of the world-famous Cypress Pocket Library contains a lot more Cypress information for men who build, drive or sail boats—Chock full of charts and pictures, too.

A request will bring a copy with our compliments. Address

Southern Cypress Manufacturers' Association

1316 Poydras Bldg., New Orleans, La., or 1316 Graham Bldg., Jacksonville, Fla.

GENUINE "TIDEWATER" CYPRESS IS TRADE-MARKED WITH THIS "ARROW"
GET IT FROM YOUR LOCAL LUMBER DEALER. IF HE HASN'T IT, LET US KNOW IMMEDIATELY



A new 100-foot steel houseboat building at City Island from designs by Henry J. Gielow, Inc.

A Twenty-Foot Water Flivver

When Harry L. Friend, of Boston, recently finished the design of a little twenty-foot runabout with a glass shelter cabin, he recognized the value in a name and called her the *Water Flivver,* anticipating her popularity on the water; and while there may not be as many of these shooting around our waters as there are "tin Lizzies" on Broadway, the little boat undoubtedly will prove popular with those who want a small, speedy, easily handled little boat and yet one with a small cabin for keeping dry and comfortable. The boat is of V-bottom type, of very snappy appearance, as are all of Mr. Friend's boats, with a slightly hogged sheer, a well crowned deck forward and a glass shelter cabin 6 feet long at the forward end of the cockpit.

The "Water Flivver," a 20-foot cabin runabout

The dimensions of this boat are, 20 feet overall by 5 feet beam, and she is powered with a 12-15 hp. motor that will give her a speed up to 15 miles per hour. The after cockpit is 6½ feet long with a wide seat at the after end, while the cabin contains seats on either side which can be made wide enough to sleep upon if desired.

Altogether the boat is a very attractive little craft which, on account of her form, should be good in rough water as well as in smooth. She is being built by N. W. Montgomery of Gloucester, Mass., and is being put out at a price which is extremely reasonable and which will make in itself a special appeal to the man who wants a handy little boat of this size.

A 100-Foot Power House Boat

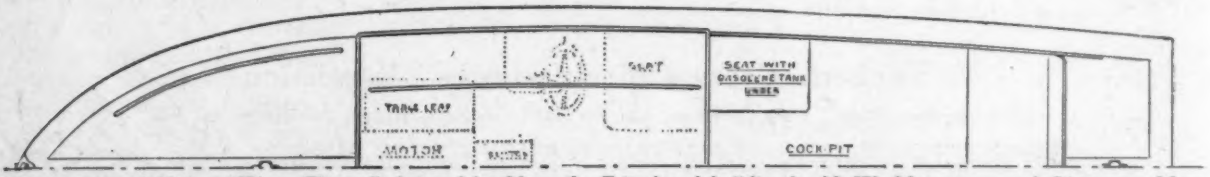
The largest yacht building in the vicinity of New York is a steel power house boat designed by Henry J. Gielow for Louis H. Eisenlohr of Philadelphia. This yacht will have the distinction of being one of the first of this type to be equipped with heavy oil engines of the Diesel type. Mr. Gielow always turns out an attractive vessel and has designed several large power house boats, notably the *Captiva* for Payne Whitney, the *Gadfly* and the *Connewago.* Due to this experience Mr. Eisenlohr will get a yacht up-to-date in every detail and with thorough construction.

This yacht, which is building at Kyle & Purdy's, City Island, is 100 feet 9 inches long over all, 95 feet 3 inches on the water, 21 feet breadth and 4 feet 6 inches draught. The motive power will consist of two 6-cylinder Nelseco engines of 120 h. p. each. These will drive her at the rate of about 12 miles an hour. As the fuel capacity is 3,400 gallons the yacht will have a cruising radius of 2,500 miles at full speed. This is unusual for a vessel of this type.

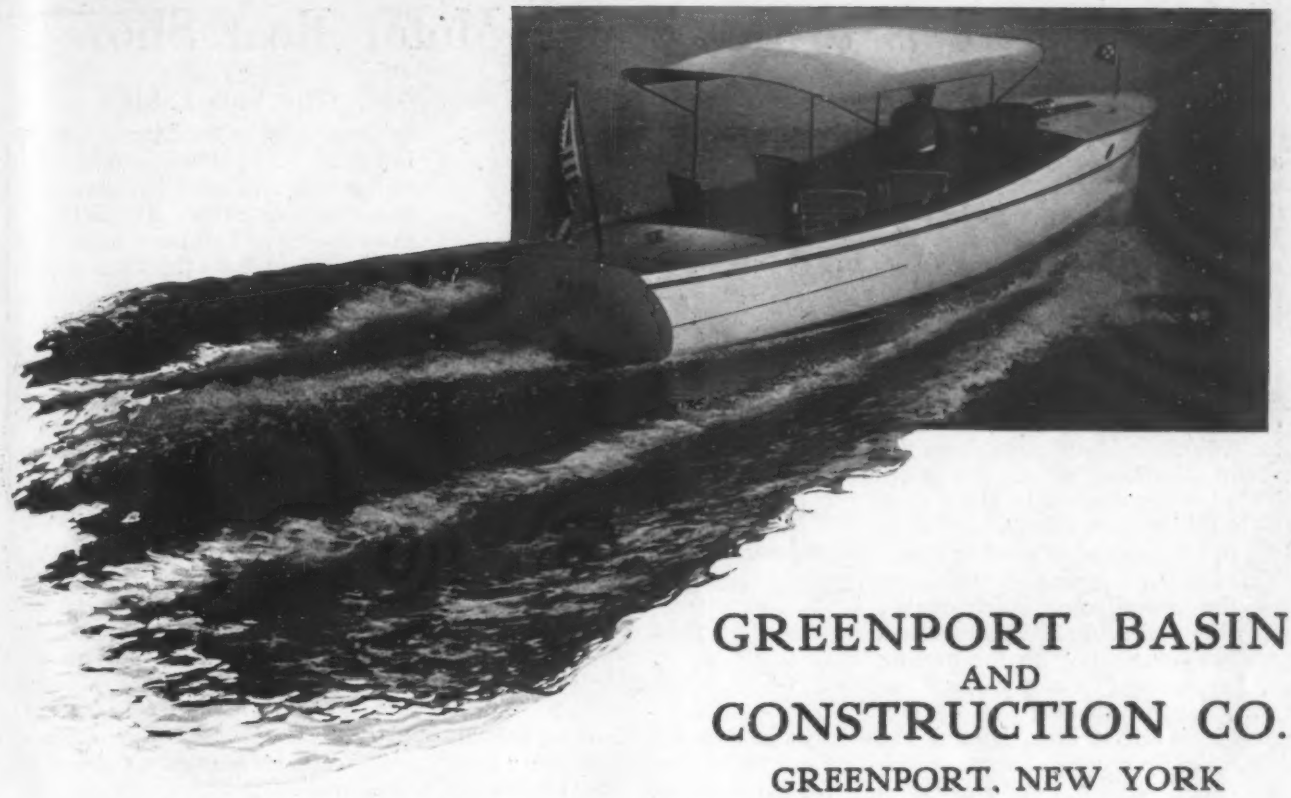
An Iceboat and Some Evinrude Motors

The exhibit of the Evinrude Motor Co. of Milwaukee, Wis., at the show is a great deal larger this year than ever before, because they will exhibit a full-size Class F iceboat designed by H. Percy Ashley with 300 square feet of sail. This is the first time an iceboat has been exhibited at the show and it will attract a lot of attention. The boat is of the famous Hudson River type, with hollow back bone, carrying a cockpit at the after end. The sails are by the well-known firm of Geo. R. Burrows, Inc., 2 South street, New York, who made suits for the entire lot of boats built by the Evinrude Company. The finish and workmanship of the boats are of the best.

In addition, the Evinrude Standard and Lightweight rowboat motors are exhibited, also the Evinrude boat and an Evinrude equipped canoe. All of these equipments, together with a full line of Evinrude accessories may be seen in Space B-4



Arrangement of 20-foot "Water Flivver," designed by Harry L. Friend and building by N. W. Montgomery, of Gloucester, Mass.



GREENPORT BASIN AND CONSTRUCTION CO.

GREENPORT, NEW YORK

Twenty-Eight Foot Standardized Utility Runabout

SEAWORTHINESS—SPEED—WATERTIGHT COCKPIT—SHELTER CABIN AND TOILET

SPECIAL FEATURE IS A DRAFT OF ONLY 20 INCHES OF WATER

NO FEAR OF INJURY TO PROPELLER

HIGHEST GRADE CONSTRUCTION, FINISH AND EQUIPMENT

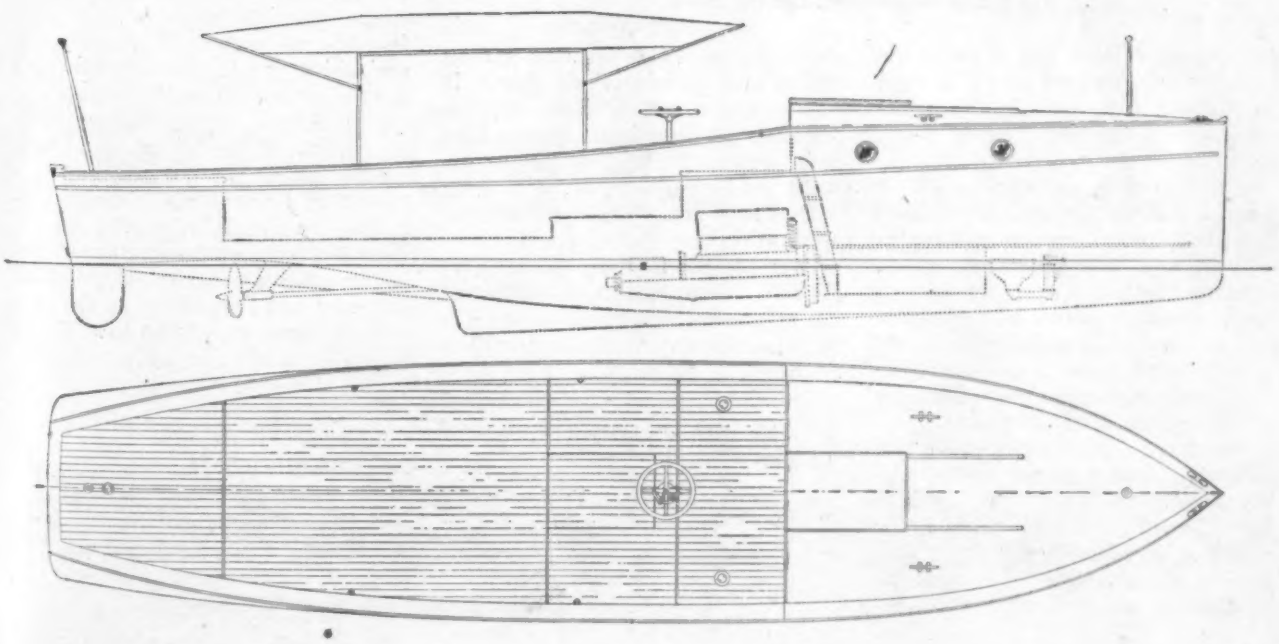
Greenport Quality

MOTIVE POWER, "AM" WISCONSIN ELECTRIC STARTING AND LIGHTING

Wisconsin Excellence

SPEED 20 MILES PER HOUR PRICE ON APPLICATION

THE 12 PASSENGER BOAT WITH MINIMUM UPKEEP.



What There is to See at the Motor Boat Show

Everything for the Boat

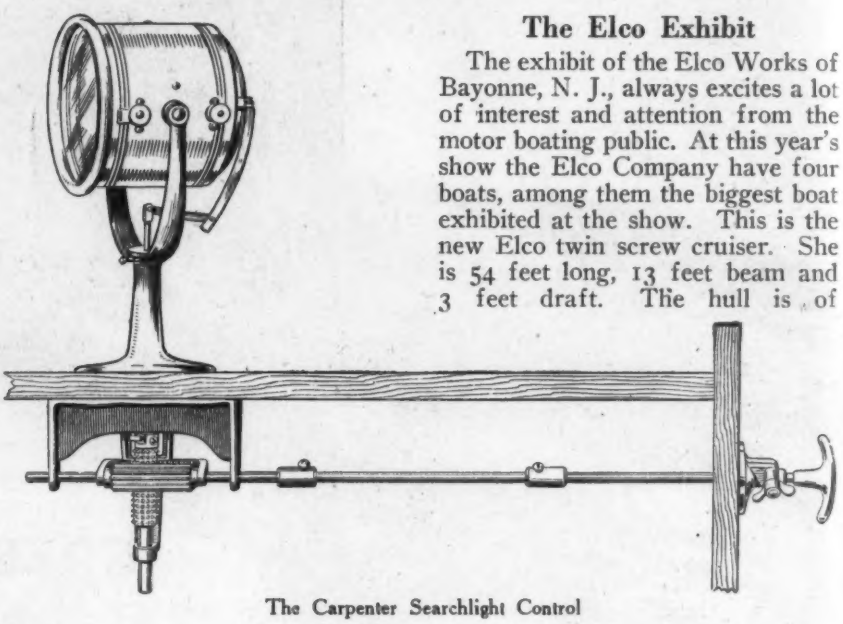
Among the devices which have added to the ease and security by which motor boats are handled, those made and distributed by Geo. B. Carpenter & Co., Chicago, Ill., occupy a prominent place by reason of their practicability, handiness and labor saving qualities.

The Kainer Ropeless Self Locking Steerer shown here is an example. This steerer eliminates entirely the lost motion or back lash which is inseparable from the use of any kind of a tiller rope. This is accomplished by the use of rigid tubing to transmit motion to the rudder instead of cord or chain. This imparts a feeling of confidence to the wheelsman which makes steering a pleasure and gives a new and welcome aspect to the owning and operating of a motor boat. Another excellent feature is the fact that it is self locking, holding the tiller rigidly in whatever position it is placed until a new impulse is given the wheel. This is achieved by using a worm gear and quadrant. The principle of this is universally acknowledged to be the best for this purpose and it is used throughout the world in the steering gears of steamers, sailing ships, etc.

The Kainer Ropeless, Self-Locking Steerer

The Ropeless and Self-Locking Gear is a device of real merit, that appeals to boat owners and builders alike. It economizes space, lightens labor, and operates with an easy, smooth, positive and noiseless action. In brief, it embodies every known improvement in construction, while it cost no more than the old-fashioned kinds of gear.

Another of the devices which this company manufacture and distribute is the Carpenter Searchlight Control. This is offered as the simplest and best searchlight control on the market. The light can be thrown up or down, and sideways in any direction, by the use of one hand, leaving the other hand free for steering. It is extensively used on the best motor boats and is being adopted everywhere.



The Carpenter Searchlight Control

This firm issues a catalog of about 400 pages, showing in detail these and other boat devices and all kinds of marine hardware, equipment for motor boats and sailing yachts and vessels of all sizes. It also contains authoritative articles on yacht sailing and motor boat handling, on the care of boats, installation of engines, etc.

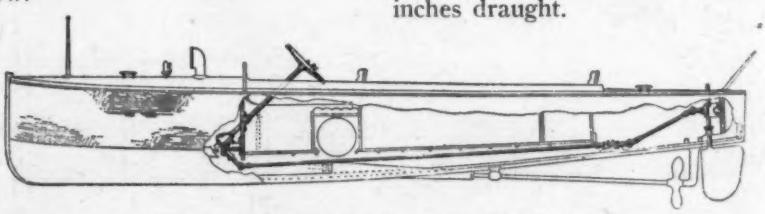
It is sent free to boat owners on application to the Geo. B. Carpenter & Co., 202 W. Austin avenue, Chicago, Ill. An interesting exhibit of boat "fittin's" is made by this company at the Motor Boat Show.

The Elco Exhibit

The exhibit of the Elco Works of Bayonne, N. J., always excites a lot of interest and attention from the motor boating public. At this year's show the Elco Company have four boats, among them the biggest boat exhibited at the show. This is the new Elco twin screw cruiser. She is 54 feet long, 13 feet beam and 3 feet draft. The hull is of extraordinary size, the internal cubic capacity being over one-third greater than is customary in a 54-foot boat. An unusual feature of this boat is the large deck house, 15 feet long, which completely encloses the bridge. By a clever scheme several different interior arrangements can be had, permitting as many as three staterooms, a bath and a saloon, in addition to the deck house. The twin screw power plant gives a guaranteed speed of 12 miles an hour, though it is possible to attain 13 miles.

The 40-foot Elco cruiser, which proved so successful last season, is again exhibited. This is one of the biggest boats ever developed on 40 feet length. There is a saloon forward, with 6 feet 6 inches head room, sleeping four persons comfortably at night. The engine is amidships, while the quarters for the owner are aft and include a private stateroom containing two built-in berths with springs and mattresses, an attractive lavatory and plenty of lockers and drawers.

The Elco exhibit would not be complete without the cruisette. The remarkable popularity of this boat is really not surprising as she is a delightful craft; 33 feet long, 8 feet 8 inches beam and only 2 feet 10 inches draught.



A 35-ft unabout, equipped with Model "B" steerer

A WIDER VISION

of the world of Motor Boating; its principles, its development, its wonderful future—may be had by visiting the present Motor Boat Show.

Those who cannot attend will gain some idea of it from the splendid descriptions which will appear in the marine magazines.

These articles will be a great aid to you in laying out your plans for next season with the aid of that indispensable book

the
CARPENTER MARINE CATALOG

The enthusiasm of last season is going to give to the coming one a marvelous expansion. All of the old boat owners and thousands of new ones will boost the game to the best of their ability.
You of course are one of the interested ones. Send for our Marine Catalog; it's free, start planning now.

GEO·B·CARPENTER & CO.

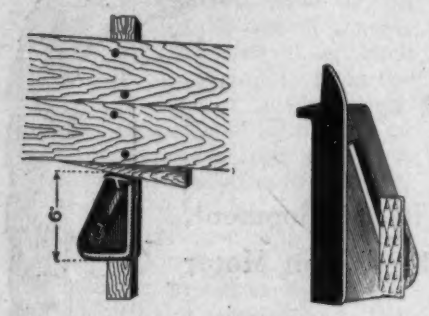
MARINE SUPPLIES

202 W. Austin Avenue, Chicago

(See our booth at the show)

Marine Hardware and Boat Equipment

In their space on the mezzanine floor, Wilcox, Crittenden & Co. of Middletown, Conn., make good their claim to 1,001 different varieties of motorboat and yacht equipment, and there is a bewildering array of "fittin's" that makes every boat owner realize how inadequate his own outfit is and fills him with a desire to stock up with each of the 1,001. Here are just a few of

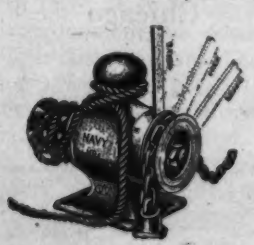


W-C chute boat clamp

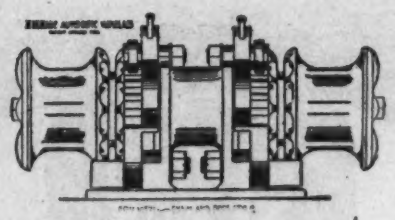
the things that Wilcox-Crittenden make, on which every skipper who goes to the show will bestow special attention: Compressors, Driboat pump, Andrade windlass, navy windlass, chute boat clamps, Maxim silencer, W-C line of auto boat steerers, flag poles with electric light attachment, flange couplings, gasoline strainers, autochime whistles, Pequot pumps, W-C reverse controls, W-C oil compasses and W-C steam controls.

Among the new articles which they show this year is the Model M Auto Boat Drum Steerer, which has many features to recommend it. In this model there is no separate steering post, as the tubing which forms the column serves this purpose, the tubing being fastened to the wheel and to the drum. In this model the spark and throttle controls and levers are fixed in the center of the wheel. This gear is particularly adapted to the smaller runabouts and speed boats.

Another line that will appeal to the motorboat owner who has been bothered with a whistle which emitted little more than an attenuated squeak that could not be heard across the harbor, is the auto-



The Nevy windlass is a handy little machine



The Andrade yacht windlass

chime whistle, which makes a real noise that is of some value in crowded waterways or in a fog. The whistles are designed to be operated on air or burned gas pressure and, with a long lever arm, they are under perfect control

While one doesn't think of a compass as coming under the head of marine hardware, the Wilcox-Crittenden oil compass has made a name for itself, and a full line of these will be exhibited at the show both with and without binnacles. These compasses come in from 2 to 5 inch diameter dials or cards. A little booklet called "Compass Talk and Tests," published by this company, is an extremely useful pamphlet on compass deviation and error, and how to apply same, which every boatman should read.

The Maxim silencer will again make a hit with those who are always striving to get away from the noisy exhaust of their engines.

Sterling Exhibit Includes New Models

The Sterling Engine Co., of Buffalo, N. Y., exhibit at the Motor Boat Show this year two new models. One of these is the Model H, bore 7 ins., stroke 8½ ins., 300 hp. at 1200 R.P.M., six cylinders. This will be an overhead dual valve motor with removable cylinder sleeves and the sleeves will be inserted in one long tank the full length of the upper crankcase. The crankshaft is four inches in diameter with a large bearing for each cylinder. The motor follows the usual Sterling practice, being completely enclosed, including the flywheel. The other new model is the Little Six, Model K, similar in construction but with single overhead valves, 2⅝ ins. diameter crankshaft, and rated at 150 hp. This motor is designed expressly for the Gold Cup Class. The weight of the larger motor is 4,000 pounds and the smaller one about 1,100 pounds.

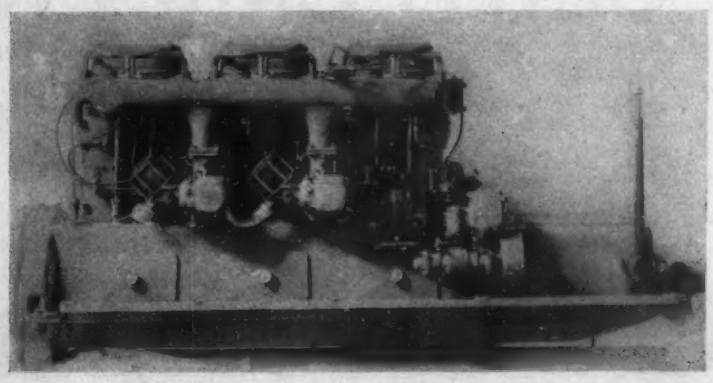
These are ultra-refined motors, built of the best material the market affords, and the choice of material is based upon twenty years of successful engine building, during which the good materials have been sorted out from the mediocre and tried out in actual service. The design of the motors conforms to conservative Sterling practice, and they are totally unlike anything else in the marine industry.

In addition to the above motors, a Model GRS six-cylinder engine, rated 275 hp. but which develops over 300, will be shown. There will also be an exhibition of the Models GH, a regular GR, in 4-, 6-, and 8-cylinder series, and one of the Model D 12-15 hp. motors.

This line of motors will cover practically the needs of any size of boat from 35 ft. up to 120 ft. in the cruising class, and in the runabout class from 26 to 40 feet in length.

A feature of the exhibit will be the sectional six-cylinder motor exhibited on the stand similar to the one shown in last year's exhibition. The main feature, of course, will be the predominance of the six cylinder motors, especially the new model K, and the famous G. R. Dual valves motors which have made a name for themselves in racing boats since they came out two years ago.

Mr. C. A. Criqui, President of the Sterling Co., and Mr. E. A. Mutchler, Sales Manager, will be at the show the entire week.



Six-cylinder, Model G. R. dual valve Sterding engine, built with double carburetor, exhibited at the Show

Pat. Apr. 8, 1919

WC Chute Planking Clamps

Save Time and Labor for Boat Builders

One of the 1,001 W C Products

WC Chute Planking Clamps can be used up or down on the turn of the bilge, and can be instantly fastened to the timbers or deck frames. The small teeth on the sliding jaw take a firm hold without marring the wood. Adjustable up to 2 in. Made of malleable iron and extra strong.

The Guarantee of WC

The WC trade mark on any article of marine hardware is a guarantee of its dependability, backed by the World's Largest Manufacturers of Marine Hardware. Put a good finish to a good job by equipping the boats you build with WC Dependable Marine Hardware.

Wilcox, Crittenden & Co., Inc.

10 South Main St., Middletown, Conn.

ESTABLISHED 1847

Visit Space 108 at the New York Motor Boat Show

ANNOUNCING TWO NEW ENGINES

"The Masterpiece of Motordom".

STERLING SEA-GULL

For runabouts 25 to 40 ft. and Cruisers up to 50 ft.

Bore 4 11/16" Stroke 6"
Overhead Valves
Normal rating 150 H.P. at 1800 R.P.M.
Weight 1250 lbs.
(Also especially built for Gold Cup Races)
Seven bearing crankshaft 2 5/8" dia.

Price $3,450.00

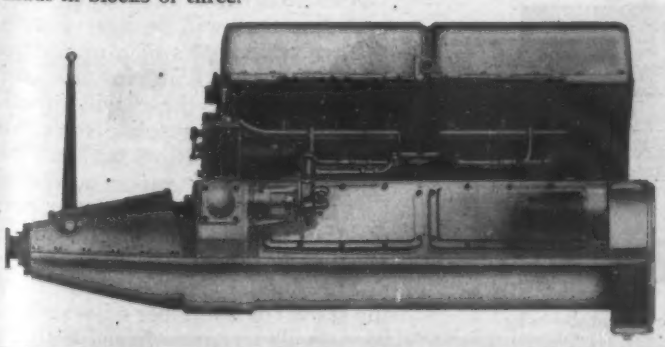
STERLING VIKING

For Cruisers 60 to 150 ft. long.

Bore 7" Stroke 8½"
Dual Overhead Valves
Normal rating 300 H.P. at 1200 R.P.M.
Weight 4000 lbs.
Seven bearing crankshaft 4" dia.

Price $10,000.00

Engines are built only in 6 cylinders, practically identical in construction. Have overhead Camshafts, driven by spiral gears. Camshafts solidly set on non-weaving cylinder casting. Cylinder water jacket extends full length crankcase for exceptional longitudinal strength, and is provided with removable cylinder sleeves, facilitating replacement. Detachable cylinder heads in blocks of three.



These engines should drive your boat dependable, faster, use less gasoline, and outlive the boat.

Literature on request

Sterling Engine Company

1258 Niagara Street

Buffalo, New York

12 to 600 H. P.

Lawley Runabouts and Yacht Tenders

The George Lawley and Son Corporation of Boston, Mass., has two boats at the show which, in the matter of finish and workmanship, illustrate the highest point to which the boat building art has been carried. The larger of these boats is a 30 footer with 6 feet beam, designed as a fast runabout or tender. Forward, there is a helmsman's cockpit from which the boat is handled, while in the after-part of the boat is a light shelter cabin, while at the extreme after-end is another small cockpit for a paid hand or the crew. This boat is equipped with a 75 H. P. Scripps motor. The hull is double planked, the planking being mahogany and the deck being of the same material, beautifully finished. This boat is sent down merely as a sample of the Lawley workmanship and construction and is not for sale, as she has been built recently for a yachtsman who intends to use her as a tender on a large steam yacht.

The other boat that Lawley is exhibiting is a 20 foot V-bottom runabout of a standardized class that this company is bringing out this year, in conjunction with the Buick Motor Company. The boats are of excellent model, the material and planking being mahogany. They are 20 feet long overall by 5 feet 4 inches beam and are equipped with a Buick automobile motor adapted to marine work. The speed, with this power plant, is expected to be 27 miles per hour. The boats are built to sell at a reasonable figure to those who want the best of workmanship, finish and material. As the use of an automobile motor is something of an innovation the result will be watched with interest.

A Lawley rowing tender will also be exhibited.

While the Lawley Company is exhibiting at the show these runabouts and yacht tenders, they are best known, perhaps, by the larger boats they turn out, and there is probably no boat building concern i nthe United States whose name is as well known as that of Lawley.

Among the yachts that have been built by the company within the past year is the *Guinevere*, a 198-foot auxiliary three-masted schooner, equipped with Diesel engines with electric drive. Pictures of this boat appear elsewhere in this issue.

Sperry Navigating Equipment and a Compound Diesel Engine

The exhibit of The Sperry Gyroscope Company at past shows has always attracted a lot of attention, as their navigating equipment, gyro stabilizers, etc., have made a big appeal to yacht owners and those who follow the sea, either for pleasure or a livelihood.

Their exhibit this year will be of particular interest since it will include the first public showing of Mr. Sperry's compound Diesel engine, a description of which appears elsewhere in this issue.

The Sperry Co. will also have on display a gyro compass, a helm angle indicator, electric log, searchlight and a new scale model, in operation, of a stabilizer they are completing for an 18,000 ton Shipping Board passenger liner.

This year on account of featuring the Diesel engine, the company will be in space "L" on the main floor, instead of in their old space on the mezzanine floor.

Durkee's Marine Hardware for the Boat

The C. D. Durkee & Co. exhibit of marine hardware at the show, in spaces 3, 4 and 5 will interest all boat owners. Among the new features shown is a muffler called the Tvedt Adjustable Muffler. It is so constructed that it may be adjusted to overcome the variation that is often found in the different types and makes of engines. It also reduces the noise from the exhaust to a minimum without causing any back pressure in the engine.

A new Tiller Quadrant will also be displayed that the Durkee Co. believes will meet with approval of all boat owners and yachtsmen.

A new Hammorod Copper Hood Ventilator in several sizes will be displayed which will make a special appeal both as to lines and to price.

Among the boat hardware and fittings shown will be a full line of portlights, locks, knobs and other joiner hardware, binnacle steerers, ship telegraphs, propellers, and the well-known Eells and Crescent Anchors. For the galley will be found one, two and three burner alcohol stoves and alcohol ranges that will make cooking a pleasure.

A tiller quadrant shown by C. D. Durkee & Co.

The New Buffalo Price List

The Buffalo Gasolene Motor Co., Buffalo, N. Y., manufacturers of Buffalo marine engines, has just issued a new price list in which some material changes are made from the prices for 1921.

On the average, the company estimates that the prices of Buffalo engines, as shown by the new price list, have been reduced more than 25 per cent. This does not mean that it is a blanket 25 per cent reduction. As a matter of fact, in the case of one Buffalo motor the price has been raised a few dollars, but this is the exception and, as a general rule, the new prices will show a decrease of around 25 per cent or better.

This is not the first cut in Buffalo prices. New price lists have been issued several times within the last two years and each time the buyer of engines has been given the advantage of whatever saving was possible as a result of improved manufacturing facilities and the lower cost of labor and material.

In a table prepared by the Buffalo Gasolene Motor Co. the new prices are contrasted with the prices of 1920 and 1921 and the difference certainly proves that the price of Buffalo engines has descended in considerably more than a nominal way.

Equipment For Your Boat

Everything in the line of brass and galvanized hardware will be found in the space occupied by R. W. Zundel Co., Inc., at the show. Among the specialties they will exhibit are Electric Horns, Bilge Pumps, Circulating Water and Oil Pumps, suitable for all kinds of boats and engines, Spark Coils, Comet Magnetos and Generators.

A line that will be interesting to the cruiser consists of a number of stoves for boat, camping and outdoor purposes; these will include the Kamp Kook gasoline stove, the Jewel kerosene stove and several types of alcohol vapor stoves so that the needs of this important part of the galley equipment can be adequately taken care of.

The Zundel Co. has exhibited at the show for a number of years and has made many friends there.

GEORGE LAWLEY & SON CORP.

The Performance, Appearance and Lasting Endurance of "LAWLEY BUILT" Boats have won the confidence of discriminating boat owners the world over.

Our reputation is backed by more than fifty years of experience in boat building—a guarantee in itself of thorough satisfaction in every particular.

AS IN PAST YEARS WE WILL EXHIBIT AT THE MOTOR BOAT SHOW AT THE GRAND CENTRAL PALACE, FEBRUARY 17th TO 25th. YOU ARE CORDIALLY INVITED TO INSPECT OUR EXHIBIT

GEORGE LAWLEY & SON CORP.

NEPONSET, BOSTON, MASS.

Hardware for Wet Places

DURKEE

We aim to Please With our Goods and Service

Booths Nos. 3-4-5 at the MOTOR BOAT SHOW

Chas. D. Durkee & Co., Inc.

Marine D *Hardware*

2-3 South St. New York

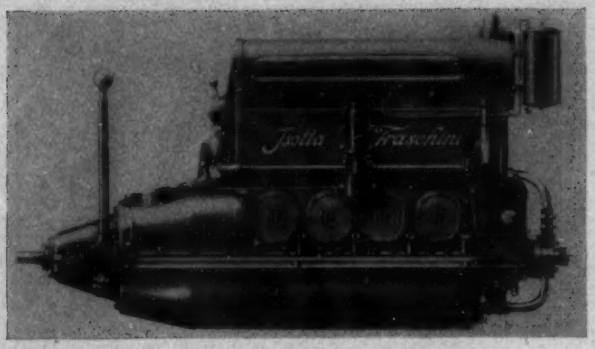
Factory Grassmere Staten Island, N. Y.

THE SPERRY GYROSCOPE CO.
MANHATTAN BRIDGE PLAZA
BROOKLYN, N.Y

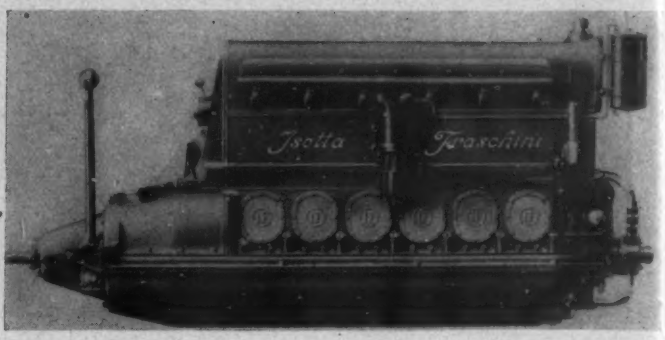
Manufacturers of
THE
SPERRY
GYRO-COMPASS

Ship's Gyro Stabilizer
Helm Angle Indicator
High Intensity Searchlight
Continuous Speed and Course Recorder
Electric Ship's Log
Magnetic Clutch

Visit our booth at Motor Boat Show



A 4-cylinder, 30-H.P. Isotta Fraschini motor; weight 1,100 lbs.



The 8-cylinder, 60-H.P. Isotta Fraschini motor for high-class runabouts

Isotta Fraschini Marine Engines

Isotta Fraschini motor cars have long been known in this country to those motorists who desired a high grade, powerful foreign car, but the two marine engines built by this Italian automobile company and exhibited at the show are the first that American boat owners have had a chance to see and study. They are proving one of the features of the exhibit of engines at the Palace and their design, workmanship and finish cause much favorable comment. The production of these motors looks as if the Isotta Fraschini Company were seriously turning their attention to the marine field.

During the War this company turned out many engines for naval purposes and many high speed scout and patrol boats on the Italian coasts were equipped with these motors. Two of these boats, only some 58 feet long, succeeded in getting past the destroyer screen of the Austrian fleet on the Adriatic, and sinking one battleship with a torpedo and damaging another so that she had to be run ashore and abandoned. This was one of the glowing achievements of the naval war in those waters.

The engines at the show are exhibited by the Isotta Fraschini Motors,. 19 West 44th street, New York City, who are the United States distributors.

The engines shown are a 30 H. P. 4-cylinder, a 60 H. P. 8-cylinder, suitable for high-class runabouts and speed boats or for fast day cruisers. A large 350 H. P. 8-cylinder is also made by the company for marine purposes.

The engines are very neat in appearance, all the working parts being enclosed, while the throttle, indicators, switches and the like, are all mounted on a stand at the rear of the motors. Many of the newer features of aviation and auto motors are incorporated in the engines, such as aluminum alloy pistons, detachable head and overhead valves. The flywheel is at the after end of the crankcase. The crankshaft bearings are formed in the lower half of the crankcase.

The bore of the two high speed 30 and 60 H. P. engines is 100 millimeters, which is equivalent to approximately 3.9 inches, and the stroke is 140 millimeters, or 5.45 inches. The smaller engine delivers about 35 horsepower at 1,400 revolutions per minute, and the makers claim a fuel consumption of only 0.6 pound per brake horsepower hour.

The regular equipment includes electric starter and generator, both of which are installed conveniently from a standpoint of accessibility. A vacuum tank is furnished as part of the regular equipment.

The position of the exhaust outlet is somewhat of a novelty and is worthy of note, being down through cored passages. It disposes of the usual unsightly and often troublesome exhaust manifold, saves a few extra parts, and greatly assists in the making of a neat installation.

The ignition is by high tension magneto. The oil is pressure fed and is cooled in the water-cooled lower base. The complete unit weighs 1,100 pounds in the 4-cylinder 30 hp. model.

Richards' Sailing Canoes and Dinghies

William Richards is showing in Space 72, on the mezzanine floor, a set of models illustrating a line of canoes and dinghies which he is building to meet the demand for boats of this type. Richards has gone recently into the building of canoes and row boats for use with outboard motors, and at the show he will exhibit a 52-inch model of a sailing canoe complete in every detail. There will also be a 24-inch model of a 12-foot V-bottom sailing dinghy, equipped with an outboard motor. He will also have the frame of a 9-foot canvas-covered dinghy, which is just the thing for the small power or sail boat. Among other models exhibited is one 36 inches long of the Star Class boats, a sailing class which has been very popular in recent years and of which over 100 boats are now being sailed in various localities. Another model is one 39 inches long of a 15-pound displacement power boat with twin screws driven by a steam plant and double acting engine.

Three Boats in the Consolidated Fleet and Some Speedway Engines

The Consolidated Shipbuilding Corporation of Morris Heights, have, as in other years, one of the largest exhibits at the show, in Space A2 and A3. The fleet they will show consists of high grade, fast day cruisers and runabouts for the man who wants to "get there" in a hurry and who appreciates appearance as well as good design and workmanship. The boats shown are a 38-foot Day Cruiser, a 32-foot Runabout, and a 25-foot Runabout. A full line of Speedway engines, including a new 300 H. P. Model "R" engine which is shown here for the first time, will feature the engine part of the exhibit.

The 38-foot Day Cruiser is described elsewhere in this issue. The two runabouts are both of the same general type, the engine in each being forward of amidships, under hinged hatches, with a large open cockpit aft, with fixed seats for the helmsman, and another seat at the after end, while there is room for easy chairs between the two. The 32-footer has a glass windshield, while both boats have full dash control. The models are extremely pleasing, the sheer line in the 32-footer being unusually graceful, and they drive easily with moderate power. The 25-footer will make 16 miles an hour on 28 H. P. and the 32-footer will reel off 22 miles with a 6-cylinder, Model "N," 66 H. P. Speedway Motor.

ISOTTA FRASCHINI MARINE ENGINES

Made in Milan, Italy

U. S. Distributors

ISOTTA FRASCHINI MOTORS
19 W. 44th ST. NEW YORK

Type L-350 (8 cylinder) 400 h. p.
1350/1450 R. P. M.

9 Ft. Dingheys **12 Ft. Tenders**

16 Ft. Outboard Motor Boats

SAILING CANOES

Complete Boats K. D.

Standardized Construction on Production Basis

Richards Guarantee back of these REAL boats

Data upon request

William Richards
747 Tremont Ave.
New York City

Space 72-N.Y. Show

Into the Wonderland of Tropic Yesterdays
The Smartest Boat in Her Class
is the 38 foot Day Cruiser designed and built by Consolidated for Captain W. H. Wheeler, of New York, for Southern waters.
Her exact duplicate will be exhibited by us at the Motor Boat Show, Grand Central Palace, New York, February 17th—25th.
No motor boat owner or enthusiast will miss inspecting this craft. To be viewed in Blocks A2-A3 at the Show.
Consolidated Shipbuilding Corp'n
Morris Heights New York
Southern Offices: Miami, Florida
Under the direction of Mr. Clement G. Amory, Treasurer
CONSOLIDATED

Chelsea Ship & Yacht Clocks

No cruising boat is complete without a ship's clock and preferably one which strikes the bells for ship's time, just to let one know he is at sea. Years ago the hour glass was the accepted method for keeping account of time. Crude as this method was it enabled the earlier voyagers to keep an approximate check on their position and provided means for timing the duration of the working hours of the crew.

As the inventiveness of clock and watchmaker produced more accurate time pieces, navigators were able to set sail on the longest voyages and account closely the position of the vessel. The time was when a time piece of any character aboard a ship was so expensive as to be only carried as a necessity. Today even the smallest cruising motor boat has a ship's clock, nicely fitted to a convenient bulkhead.

Among time pieces for boats of all descriptions those made by the Chelsea Clock Co. of Boston, Mass., are among the best. The Chelsea Clock Co. make ship's clocks that are suitable for the cabin of the most modest or of the most palatial yachts.

These clocks can be had in bronze or wooden cases for either bulkhead or shelf and in a wide variety of styles. They are made with or without striking mechanisms. Same may be had artistically set in the center of a ship's steering wheel, while others are mounted on bases for standing on buffet, dresser or book case.

There is a place ashore for the Chelsea Clock as well as aboard a boat. In fact many clubs and residences use these excellently made eight-day clocks both for the accuracy of their time keeping and the exquisiteness of their design and finish.

They will be found at the Motor Boat Show exhibited by the better equipment dealers.

Toppan Catboats

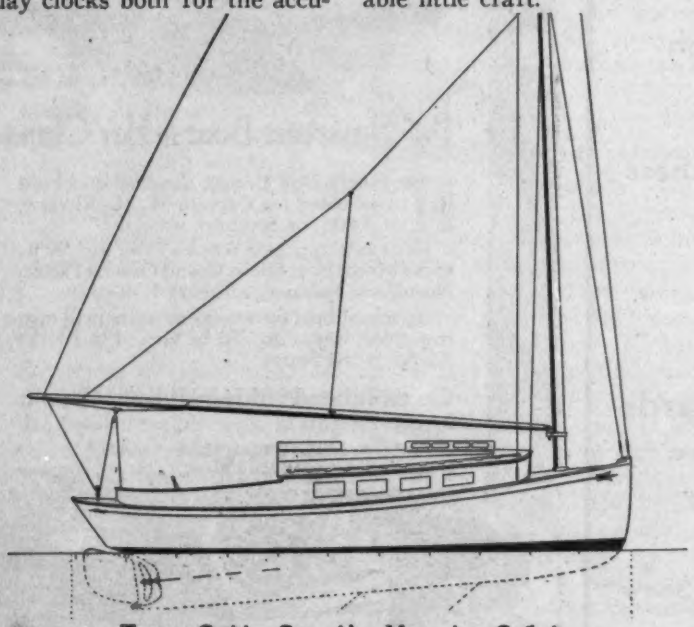
The Toppan Boat Mfg. Co. of Medford, Mass., while not exhibiting at the show this year, are producing two new boats which will be sure to please both the racing and the cruising yachtsmen.

For a small, one-design class, the *Toppan Tot,* a Marconi-rigged catboat, is a wholesome and popular little boat for day sailing and class racing, while for those who want to cruise, the 22-foot overall auxiliary cruiser cat is very attractive.

This latter boat has 9½ feet beam. She has a very roomy cabin with nearly 5 feet head room, with wide transoms, plenty of lockers and a well arranged galley. The engine is installed in the forward end of the cockpit, a small one-cylinder motor being sufficient power, though a larger engine can be carried if desired.

She may be rigged either with a Marconi or with a gaff-headed mainsail, the latter being still popular with cruising men, many of whom like it better than the Marconi, due to the fact that they can drop the peak in a squall and "jog" along, whereas with a Marconi rig they would be "lugging it", with no way of shortening sail save lowering the whole mainsail.

The plans of both of these boats are by Harry L. Friend of Boston, Mass., and they are both particularly handsome, well appearing and able little craft.



Toppan Cruising Cat—either Marconi or Gaff rig

Twentieth Century Motors

The exhibit of the New York Yacht, Launch and Engine Co., Morris Heights, N. Y. City, consists of a 4-cylinder 6½ x 8½, 400 R.P.M., 40-50 hp., and a 6-cylinder 6½ x 8½, 400 R.P.M. 65-75 hp. Twentieth Century Motor.

The Twentieth Century Motor has now been on the market for over twenty years, and during that time has made many friends among yachtsmen. The makers of this motor have consistently followed their original ideas in the way of heavy duty construction, and the two motors that are exhibited show the results of consistent application of improvements as they have developed in the internal combustion motor, retaining those features that have proved their worth in years of service.

This Twentieth Century Motor is an extremely flexible machine, and the 1922 model which is exhibited shows a number of improvements, among which are separate cylinder heads over each cylinder, the use of the exhaust manifold as a heater for the cast inlet which is so essential to the proper carburation of the present gasoline (the use of this heater giving a thorough fuel mixture), and great economy in the fuel. The exhaust valves and inlet valves are mechanically operated and are accessible by means of removable cap over each valve. There are two sets of ignition plugs, one from the Bosch high tension magneto, and one from the battery by means of single coil and distributor.

This 20th Century Motor is a machine that is well worth thorough inspection and the makers are always glad to have visitors come to their shop at Morris Heights, where they can show the motors under construction and in actual operation.

Frisbie Motors

The Frisbie Motor Co. of Middletown, Conn., has a new line of valve-in-head motors, known as Model "T," which they are exhibiting this year in addition to the line of Frisbies which are already well known to all readers of YACHTING and to boat owners generally. This new model offers to users of heavy boats of moderate size and to owners of sail boats wanting auxiliary power, a refined, clean, quiet and reliable power plant, particularly suited to this line of work. The four-cylinder 100 H. P. Model "T" 4 is especially adapted to express cruisers.

☞1921 Price Lists REDUCED 12½%, Effective February 1, 1922

SHIP'S BELL CLOCKS and AUTO CLOCKS

Clocks of Excellence
All Others Are Comparative
Ask Any User

MANTEL and BOUDOIR CLOCKS

For Your RESIDENCE, CLUB, AUTOMOBILE, YACHT, MOTOR BOAT, and for GENERAL PRESENTATION PURPOSES

"Chelsea" 8-Day High-Grade Clocks

☞FOR YEARS THE RECOGNIZED STANDARD OF QUALITY
☞ON SALE BY LEADING HIGH CLASS JEWELERS

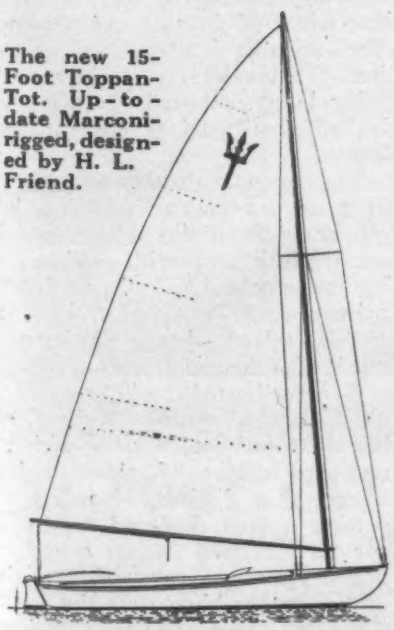
☞Buy From Your Jeweler or Nautical Instrument Dealer

CHELSEA CLOCK CO., Makers of High-Grade Clocks
10 State Street, Boston 9, Mass.

☞ In Residences, Clubs, etc., very many users prefer the "CHELSEA" 8-day Ship's Bell Striking Clock to any other form of striking clocks. YOU HEAR and, at once, KNOW the TIME.

TOPPAN BOATS

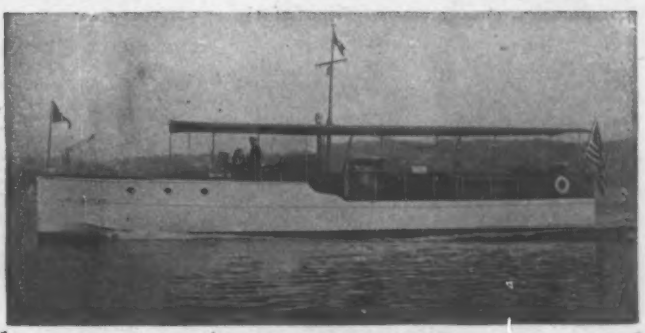
SAFE—SEAWORTHY—RELIABLE



The new 15-Foot Toppan-Tot. Up-to-date Marconi-rigged, designed by H. L. Friend.

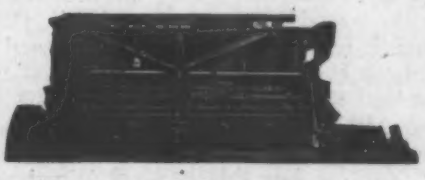
Our line for 1922 contains the following new models: 22-foot x 9½ foot cruising cat, either Marconi or gaff rig, comfortable cabin, very able. 15-foot Toppan-Tot for racing or day sailing. Also these other well known models: 22-foot Cabin Dory; 21-foot Club Sailing Dory, designed by C. D. Mower, and complete line of Swampscott sailing dories. Also power dories, tenders and launches.

TOPPAN BOAT MFG. CO.
Medford Dept. Y Mass.



Mimi B—one of our 53-footers

We build yachts complete and there is no divided responsibility. Our 20th Century Motor, which we build in our own shop, is one of the leading engines. We are in position to build you a complete yacht, furnished and equipped, at prices that cannot be equalled when construction and finish are considered. Let US figure on your new yacht for next season.



6-Cylinder, 6½" x 8½" 65 H.P. Twentieth Century Engine

N. Y. Yacht Launch .....AND..... Engine Co.
Morris Heights
NEW YORK

Making a Leaky Boat Watertight

A leaky boat is an abomination, which every man who has ever owned one will testify to. How they may be made permanently tight by the use of Jeffery's Marine Glue, a well-known waterproof compound largely used by boat builders and boat owners, is told by L. W. Ferdinand of Boston, Mass. He says:

"Many a sail, motor or rowboat has been insured against leaking for many years to come by a few hours' work at this time of the year. Yet there are many boat owners who go on, year after year, doing a little calking, puttying and painting, knowing all the while that soon after the boat goes overboard again she will still leak more or less. Small wonder that those who have learned how to make their boats absolutely leakproof are loud in their praises of the simple formula which had banished the bilge pump and the scoop and limited the wetting of the inside of the boat entirely to the water which comes in above the gunwales.

"The materials needed are simple and inexpensive. They comprise sufficient unbleached muslin to cover the hull and a sufficient quantity of marine glue to spread freely over the entire outer surface of the boat. The implements consist of a stiff brush, a couple of heavy flatirons, a heater and a suitable container in which to heat and melt the glue. The principle involved in making any small craft leakproof is simple enough. The glue is, of course, absolutely waterproof and a hull painted with a heavy coat of hot glue is waterproof even before the heavy unbleached cotton cloth is applied. The operation of laying the cloth in the glue by ironing with a hot flatiron draws a portion of the glue up into the pores of the cloth, filling and waterproofing it, so that no water can soak in. The cloth and the boat's bottom in this operation actually become as one, and neither water nor oil can permeate them as long as the boards of the boat hold together.

"The first thing to ascertain is how many square feet you wish to waterproof. With these figures one can order the proper amount of glue. It will take one pound of glue to every three square feet of boat. In the selection of the cloth do not buy canvas or cotton duck. The best thing is heavy unbleached cotton cloth, of a good grade, firm and close in texture. You can buy this cloth in one entire length, which should represent more than twice the actual length of your boat, as you must allow for the bilge and sheer. You can cut this length in half yourself, using one piece on each side of your hull. You will also need one roll of good twill tape, one-half inch wide. At a paint shop, procure sufficient shellac to give one heavy coat to the surface after it is waterproofed. Obtain a package of one-half inch copper tacks for fastening the cloth to the boat. The brush to be used, and one that will work in good shape, is a common whiskbroom that has been worn or cut down to a stub. Be sure that the binding strings of this whiskbroom are holding the straws firmly. Otherwise, secure a common wire sinkbrush.

"The boat needs practically no preparation previous to the waterproofing process, except that the hull be dry and clean and all loose paint removed and the stem band at the bow removed. The first operation is to stretch the cloth. This is best done by tacking in place on the hull itself, as it allows the cloth to set to the lines of the boat. Allow the cloth to stretch about 24 hours and then remove it temporarily. You are now ready to paint the bottom and sides with the hot glue. After this is done stretch the cloth over again, tack it down and iron in with two 7-lb. flatirons. This is the method to follow.

The new yacht stove manufactured by the Prentiss-Wabers Co., which banishes trouble from the galley

Prentiss-Wabers New Galley Stove

To the boat owner who has never been satisfied with his galley stove, the exhibit of the E. J. Willis Co. of New York, will prove alluring, as this company is the New York representative of the Prentiss-Wabers Stove Co., makers of boat and camp cooking equipment. The E. J. Willis Co. have taken four booths this year, where formerly they only used two, and they are very optimistic over the outlook.

One of the specialties they will exhibit is the new Prentiss-Wabers galley cook stove that was made for "Gar" Wood according to his own suggestion and which gives a steady blue flame which a 30-mile wind will not blow out.

This stove burns gasoline and the gasoline tank is made as a separate unit and can be placed outside the galley, if desired, with copper tubing to carry gas to the stove, or can be attached to the frame of the stove. It is clean, convenient and never gives any trouble. In building this stove, several prominent boat builders and owners were called in for their ideas and the result is a galley stove which will meet every requirement both for fresh and salt water boats. It gives a steady blue flame that will not blow out and it is light, efficient, compact and dependable.

In addition to the usual line of marine hardware, a complete line of searchlights, sailing lights with waterproof sockets, electric cabin fixtures, water pumps, cushions, paints, reverse gears, etc., will be shown.

Skaneateles Boats and Canoes

On Skaneateles Lake, up in central New York, the Skaneateles Boat and Canoe Co. are making a line of small boats, both sail and power, which have many features to recommend them to those who want craft for summer use on lake, river or at the seashore.

One of the boats the company is specializing in is a 15-foot catboat. This craft has a deck forward and aft, with side deck and combing, leaving a large cockpit that will hold four or five persons. The sail area is about 100 square feet. The model is good, the rudder being hung outboard, so that she is "all boat" and is big for her length.

The company also builds dinghies in 8, 10, 12 and 16 feet lengths, copper fastened throughout, which are fine little boats with good carrying capacity and sell at a moderate price for the man who wants a well-built boat without putting too much of a dent in his pocket book.

Another boat that will prove very popular is a specially built Outboard Motor Boat for use with an outboard motor of about 2 hp. There is a distinct advantage in getting a boat designed especially for an outboard motor, over one not designed to carry the weight of this motor hung over the stern. They are sixteen feet long by four feet beam. The stem, keel and transom are made of selected white oak; the decks of mahogany or butternut; the seats of cypress. The planking is of selected white cedar and all fastenings are of copper.

AFTER
JEFFERY'S MARINE GLUE has certainly done the trick. She doesn't look a drop now
Oh Boy! Another one! This is a little different than continuously baling out the boat

Use Jeffery's Waterproof Marine Glue

And Enjoy Every Minute of Your Outing

DOES YOUR BOAT LEAK?

Send for our Booklets "How to Make Your Boat Leakproof" and "Marine Glue—What to Use and How to Use It"

Any old boat, so long as the frames are in fair condition, can be made water-tight by following the instructions in the above booklet. This applies to anything that floats, from a canoe to a yacht. Wood or steel. Put your leak troubles up to us, and we will help you to stop them.

For more than 75 years Jeffery's Marine Glue has been the choice of the foremost boat builders of the world.

Jeffery's is a product that has not varied from the strict line of quality—it is not a competitive commodity made to meet a price.

JEFFERY'S WATERPROOF MARINE GLUE
IN ALL THE VARIOUS GRADES

For sale by all Yacht, Boat and Canoe Supply Houses, Hardware, Paint and Oil and Sporting Goods Dealers.

L. W. FERDINAND & CO. **152 Kneeland St., Boston, 11, Mass**

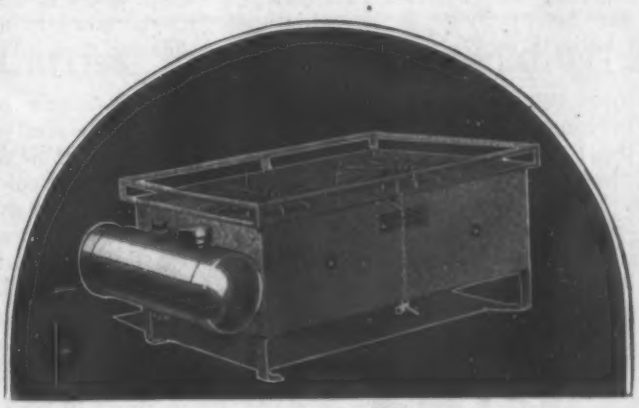
15 FOOT CAT BOAT

Rigged in a jiffy

No stays. No turnbuckles. No bother.
Mast slips into galvanized tube.
Rudder and tiller quickly removed.

SKANEATELES BOAT & CANOE CO.
48 Jordan St., Skaneateles, N. Y.

Established 1893



SPECIFICATIONS
Size 20¼"x10½"x 5½"; legs 2"; body galvanized iron; fittings galvanized, copper or brass; gas tank brass, with pressure gauge. Price complete with pump and funnel . . . $20.00
Can also be had with gas tank separate from stove with 15 ft. of copper tubing so tank can be mounted on deck. Tank galvanized iron, soldered inside. Price of stove complete with 3-gal. tank, $32.50, with 1-gal. tank . . . $27.50

FOR YOUR NEW BOAT

GALLEY Auto KOOK KIT

PRACTICAL and efficient—requires minimum space—and is perfectly safe and easy to operate. Built at the request of several prominent boat owners and builders, and designed in accordance with their ideas. The result is a practical galley stove, complete in every detail, and adapted to both fresh and salt water craft of all sizes.

Burns ordinary motor gasoline—gives a steady hot blue flame that a thirty mile wind cannot blow out.

Specify Auto-Kook-Kit on your new boat

Prentiss-Wabers Stove Co.
General Offices and Factory, Spring Stree
WISCONSIN RAPIDS, WIS.

See it on display—New York Motor Boat Show-Booths 83, 85, 87, 89

Eliminating Vibration

All those who have done any amount of running in power boats will agree that if vibration could be eliminated at all speeds the internal combustion engine would be much more satisfactory. There is, of course, a wide difference in the amount of vibration present in engines and boats, depending upon how much attention is paid to balance and structural strength, but all of them show more or less of this unpleasant feature. Every boat owner would be glad if this could be overcome and those that take in the Motor Boat Show will see how this vibration can be eliminated by visiting the exhibit of the Vibration Specialty Company of Philadelphia, in Booth D 212. This company has made a long study of engine vibration and are makers of special machinery for the elimination of it.

With the balancing machines made by the Vibration Specialty Company, one is able to have indicated the position and amount of unbalance, whether static or dynamic. They also indicate the plane and amount of correction necessary in each instance. This applies to balance of crank shaft and fly wheel, propeller, or any other moving part of the engine. Anyone who wants to be convinced on these points may have his wish gratified by discussing the matter, or his particular problem, with this company, either at the show or by writing them direct. The pleasure boat buying public is entitled to these refinements in the engine which they use; in fact, such perfect balance is a prerequisite of comfort and is an indication of the true quality of an engine.

As an example of good balance and consequent lack of vibration the company refers to the statement of Commodore H. B. Greening, former owner of *Rainbow I*, a runabout that makes considerably better than 40 miles per hour and that was twice winner of the Fisher trophy. He says: "I must admit that the balancing of the crankshaft and engine in the *Rainbow* is an excellent piece of work. Everyone who has ridden in the boat remarks on the absolute absence of vibration; the engine runs magnificently and absolutely without tremor."

For a Mildew Proof Sail

One of the greatest boons to the sailing yachtsman that has come along in many years is a mildew proofing process perfected by the Tate Electrolytic Textile Processes, No. 45 East 17th St., New York City, and known as "Tatelec." Heretofore there has been no satisfactory means of treating a sail to prevent its mildewing, and many a fine and costly suit has been spoiled soon after bending, due to the dampness and heat of the summer, and the owner was forced to sail with a stained and dirty lot of canvas until he had purchased a new suit.

In the Tatelec process the canvas is treated before it is made up into sails, and any sailmaker can get the cloth treated in this way if requested to do so by those placing the order.

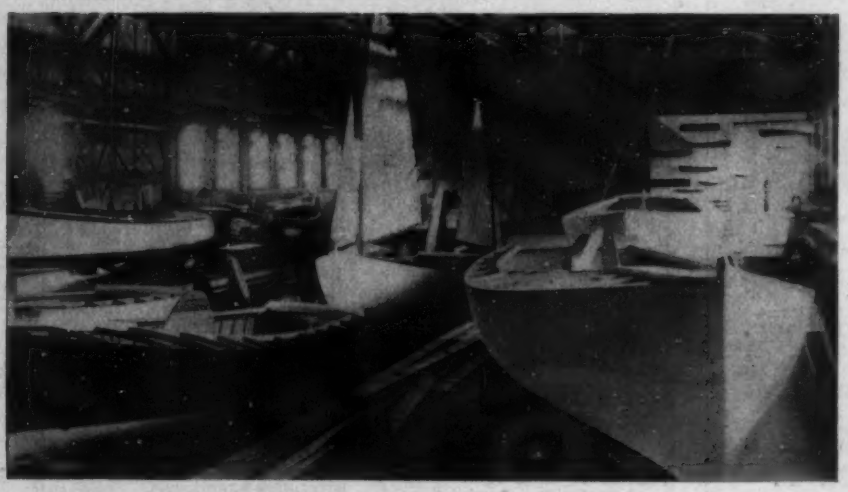
Sails made of Tatelec treated sail cloth shed the water, remain light in wet weather, and will not mildew or discolor. This treatment renders the canvas non-absorbent —impervious to water. The canvas does not harbor disintegrating moisture—even if furled when wet.

Yet Tatelec treated canvas looks and feels like ordinary canvas. The pores are as open as ever. The pliability is not affected. In fact, a lighter weight canvas can be used if Tatelec treated.

Tatelec Electrolytic Treatment is radically different from all others. The process has the unqualified indorsement of Naval Architects, sailmakers and boat owners who have used it, and most of them say that they would not order a suit of sails not treated in this way. Some of those who have used the process and have written to the company testifying to their satisfaction are, John G. Alden, N. A., Consolidated Shipbuilding Corp., S. S. Crocker, Jr., N. A., Geo. R. Burrows, Sailmakers, William M. Baldwin and many others. A very attractive booklet illustrating some of the yachts equipped with Tatelec sails, entitled "Mildew Proof Canvas," may be had free by writing the company at the above address.

Dauntless Sailboats

Sailboats are very much in evidence at the show this year, and a new exhibitor (although long in the business of boat building) is the Dauntless Shipyard, Inc., of Essex, Conn., on the Connecticut River, builders of the well-known Essex Sloops, Essex Jolly Boats and fast motor boats. The boat at the show is the Jolly Boat—a fine little craft for day sailing, racing or for use as a yacht tender. This boat is 13.2 feet long, 4½ feet beam, with a tobin bronze dagger board and a Marconi Mast, the sail area being 100 square feet in mainsail and jib, made by Wilson & Silsby. Everything about this little craft is high class, the material and workmanship being of the best, and the design will make an appeal to those who know what a real boat should be like. The designer is E. N. Way.



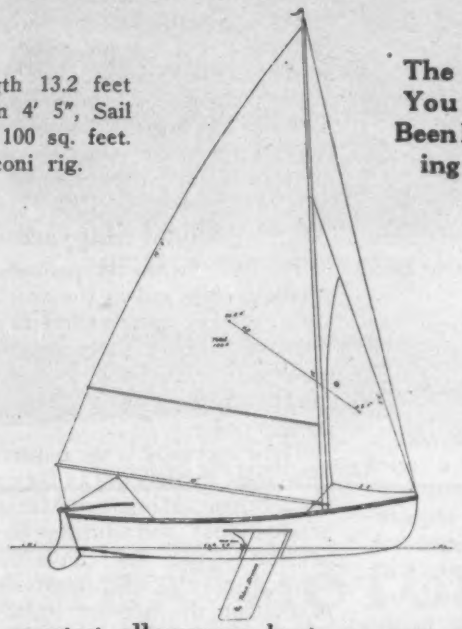
The interior of the Dauntless Shipyard boat shop, showing 16-foot Essex class boats under construction

E. N. Way (left) and W. B. Brash, designer and manager of the Dauntless Shipyard, Inc.

THE DAUNTLESS JOLLY BOAT
A SMART BOAT AT A SMALL PRICE

Length 13.2 feet
Beam 4' 5", Sail area 100 sq. feet.
Marconi rig.

The Boat You Have Been Looking for



The smartest all-purpose boat—an easy rowing dinghy, to be carried on davits, which can be quickly rigged with Marconi mast to be a fast sailing boat for sport. Send for specifications and descriptions. Today! Now!

THE DAUNTLESS SHIPYARD
ESSEX, CONNECTICUT

Vibrations

Caused by

Unbalance of shaft or propeller
Can be* and *will be

PREVENTED

when boat buyers *insist* upon freedom from this annoyance.

Visit Booth 80
at the Motor Boat Show

and let us show you how any engine manufacturer can eliminate vibration, just as it was eliminated in Rainbow I.

WE SOLVE VIBRATION PROBLEMS

VIBRATION SPECIALTY COMPANY
Harrison Bldg., Philadelphia
N. W. Akimoff, President

Curtiss Motor-Boat Water Closets

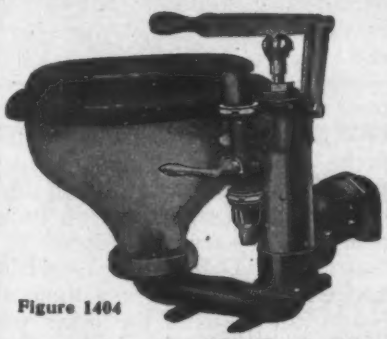


Figure 1404

A NEW IMPROVED MOTOR BOAT CLOSET

Dimensions, 18x18x11" high to top of bowl. 2½" cylinder. For above or below water line.
The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

Curtiss Porcelain and Folding Lavatories

Corner Porcelain Lavatory

Dimensions, 12" x 12", 12" x 14" and 12" x 15".

Folding Lavatories in all styles and sizes.

Fig. 1392-A

All prices subject to market advances, which are continually changing

Manufactured Solely by

THE J. H. CURTISS CO., 2 South Street, New York

MILDEW PROOF CANVAS
FOR
SAILS, AWNINGS, COVERS, TENTS

A PERMANENT PROCESS
PROOF AGAINST RAIN AND MILDEW
WHICH DOES NOT CHECK VENTILATION
IT SOFTENS AND PRESERVES THE FABRIC AND PREVENTS SHRINKING AND COLOR CHANGING

TATELEE TRADE MARK

TATELEE TRADE MARK

OFFICES
45 EAST 17th STREET
NEW YORK

TATE ELECTROLYTIC TEXTILE PROCESSES
INCORPORATED

WORKS
CRANSTON
RHODE ISLAND

A 30-foot sea sled designed by Albert Hickman. A boat of this type is exhibited at the Show

For the Toilet Room Aboard Ship

In the booth (1 & 2 mezzanine floor) occupied by the J. H. Curtiss Co., 2 South Street, New York, the boat owner will find an array of toilet room fittings that will satisfy the most exacting. On a boat on which one is cruising or living there is nothing that makes for convenience as much as a well-equipped toilet room with all the facilities one would find in one's own home. These can be had, even on a small craft, if some ingenuity is used, and care is taken in the selection to get plumbing that is suited to the particular case. A look at the Curtiss line will convince one of this.

There are all kinds of washstands —folding, stationary, porcelain or metal—to fit corners or to go on bulkheads; there are pumps for drawing water from tanks, there are bath tubs, closets, etc.

Hall-Scott Engines for Runabouts and Fast Cruisers

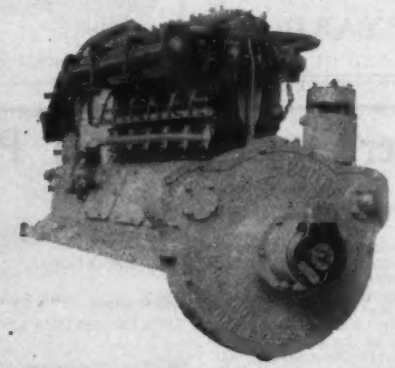
The Hall-Scott Motor Car Co., Inc., occupy Block "N," the same location as last year, and show two sizes of Marine Engines which they are manufacturing and which have proved themselves so well suited for fast yacht tenders, runabouts and fast cruisers.

The "Balanced Four" 125 hp., which will be on display, is a duplicate of the engines installed in the popular Belle Isle *Bear Cats* and other smart runabouts. It is a motor well suited for boats being built for the Gold Cup Race, to be held in Detroit next summer.

The six-cylinder 200-hp. motor shown is a duplicate of the engine which drove the *Adieu* to victory in the Fisher-Allison Trophy race at Miami in February, 1921; also, a duplicate of this same engine drove the *Nick Nack*, officially the world's fastest single marine engine-powered displacement runabout, in its record breaking races in Detroit and Toronto last season.

Sea Sleds at the Show

The Sea Sled Company, Limited, West Mystic, Conn., is exhibiting at the Motor Boat Show a 24 foot by 5 foot sea sled equipped with a 40 H. P. engine, the first of a series of moderate powered sea sleds built to suit the average man's requirements. The boat has selected oak frames, is double planked with cedar on bottom and sides, and copper riveted throughout, built to the usual high standard of sea sled workmanship. Hull and topsides are painted white and trim finished bright. A single engine swings two



Six-cylinder Hall-Scott 200 H.P. motor

surface propellers driving through gear box and universal joint, and with this 40 H. P. engine installed the sled has a maximum speed of 25 M. P. H.

The control cockpit is aft, fitted with upholstered bucket seat for helmsman, and also a thwartship seat holding three passengers. The forward cockpit is large and roomy and can be fitted to suit owner's requirements, the standard equipment being a thwartship seat full width of boat at after end of this cockpit. All seats have demountable cushions with upholstered backs stuffed with kapok. Deck fittings are brass or bronze throughout, and the boat has regular equipment, including Hickman sideplate rudders and automobile type controls.

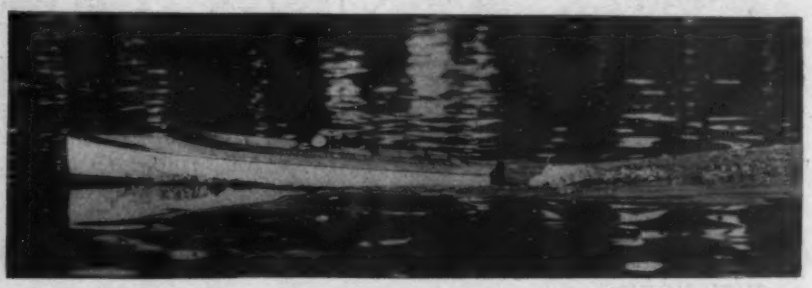
A Model Shipyard

To have what is probably the smallest shipyard in the world and yet to turn out more ships in a year than any two or three other yards combined is the unique distinction of The H. E. Boucher Mfg. Co. of New York.

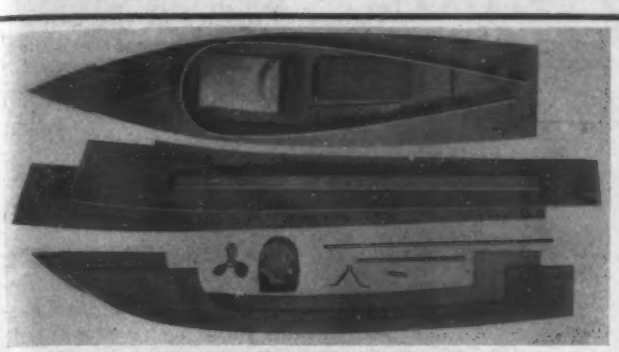
Their specialty is the construction of marine models or, as they prefer to call them, Miniature Marine Reproductions, and during the past seventeen years they have modeled ships of all classes, nations and periods, for the United States, and foreign navies, for shipyards, shipping companies and yacht owners.

About a year ago they brought out a series of practical miniature yachts—sailboats and power boats —and have since added a number of new engines and accessories. While the smaller sailboats and spring driven runabouts are intended for boys, the greatest appeal of these interesting little yachts is to the "boy" of 25 to 80 years in age, which is to say—all men with red blood in their veins.

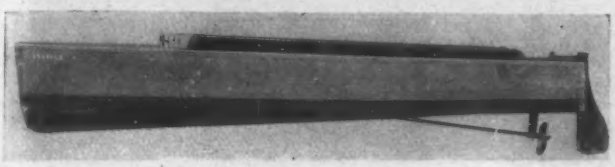
Many men like to do things with their hands, and the brain worker especially finds an evening at the home bench a refreshing change from his day's routine. Certainly there is more satisfaction in being able to say "see what I made" than "see what I bought," especially when it happens to be a thing of beauty and reaches the other side of the lake ahead of the other boats. With this in mind The H. E. Boucher Mfg. Co. do not confine themselves to finished models but will supply any boat or engine in any stage of completion; or any part may be purchased separately.



A 30-inch Model Power Boat with a steam plant, made by the H. E. Boucher Mfg. Co. She appeals to every "boy" from 15 to 80 years of age



COMPLETE CONSTRUCTION SET



FINISHED 30" MOTOR BOAT

An All the Year Around Sport

This construction set and some pleasantly spent Winter Evenings will give you a Summer's Fun

Build and sail your own

Miniature Marine Reproductions

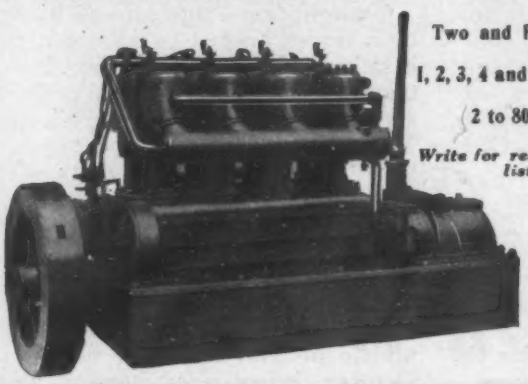
We have other Power and Sail Boats
Engines — Boilers — Fittings
In any stage of completion

See them at the Motor Boat Show or

Send for catalog

THE H. E. BOUCHER MFG. CO.
152 Lafayette St. New York

PALMER MOTORS



Two and Four Cycle

1, 2, 3, 4 and 6 Cylinders

2 to 80 H. P.

Write for reduced price list

Palmer Bros. Engines, Inc.

COS COB, CONN.

Hall-Scott Marine Engines

The BETTER Marine Engine for runabouts and fast cruisers. Greater Speed—More Economical—Less Vibration—More Engine Room Space. "Always Reliable."

TWO SIZES ONLY { 4 Cyl. 125 H. P. Weight 1100 Lbs.
6 Cyl. 200 H. P. Weight 1300 Lbs.

HALL-SCOTT MOTOR CAR CO., Inc.

Eastern Sales and Service Branch 883 Niagara St.
BUFFALO, N. Y.
FACTORY: BERKELEY, CALIFORNIA

Chas. P. McClellan

Sailmaker

Patented Boat Tops and Spray Hoods

Fall River, Mass.

SEA SLED

Inverted V-bottom and Surface Propeller Boats. Hickman Patents In all countries.
Trade Mark Reg. U. S. Pat. Off.
Trade Mark Reg. Canada

Builders of high speed runabouts and cruisers with guaranteed speeds up to 50 miles per hour; also, small and moderate powered Sea Sleds for ordinary runabout, and for commercial purposes.

Sea Sleds will carry higher weights per engine horse power at greater speeds than any other type of boat built.

THE SEA SLED COMPANY, Ltd.
West Mystic, Conn.

The largest and fastest sailing boat in the Country for the money. For circular and price address,

J. H. PERRINE,
Barnegat, New Jersey

Paragon Reverse Gears on Many Engines

In spaces 20 and 21 on the mezzanine floor, the well-known Paragon Reverse Gears will be exhibited, and, in addition, the officers of the Paragon Gear Works will be at home to the many users of these gears who visit the palace. Paragon Reverse Gears are known wherever there are motor boats as a gear that stands up in actual service and does all that is asked of it.

A full line of these gears will be shown, suitable for the smallest sized engine and right up to those built to fill the needs of the biggest marine internal combustion engine used for pleasure or work boat purposes.

It is a well known fact, and one appreciated by all motor boat owners as well as by mechanical engineers, that it is the reverse gear that makes or breaks the engine it is attached to. It is the most vitally important accessory on a marine engine. No matter how well your engine may be designed and built if it is not equipped with a dependable transmission it cannot be successful—it will not give the satisfaction or have the life that should be expected from it.

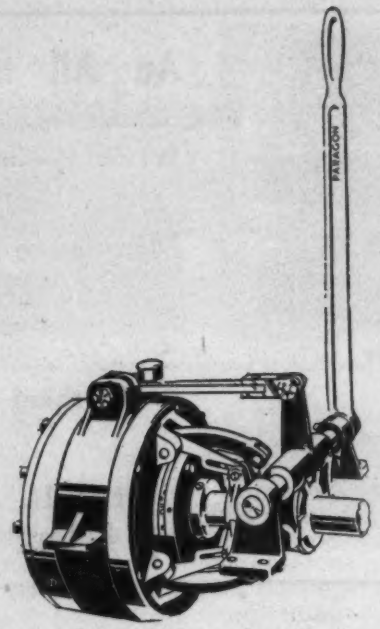
That is why over *thirty-one* of the most prominent engine manufacturers of the country continue to use the Paragon Reverse Gear as part of their standard equipment.

Those boat owners who have seen marine motors and accessories come and go during the last decade will appreciate the dependability that they have always found in the Paragon Gears. They are content to let the other fellow experiment, but with their own motors they prefer not to take any chances. And even though Paragons may be a little higher in price—at first—those who know them, and the builders of quality motors, know why this is so.

So anyone wanting a rugged, dependable reverse gear that'll stand up and give the service required of it as long as the motor will, should follow the example set by these builders and *play safe*.

Here is a list of engine builders who use the Paragon Gear as part of the regular equipment of their motors:

Acadia Gas Engine, Ltd.,
Anderson Engine Company,
Barker Factory,
Bridgeport Motor Company,
Commonwealth Motors Company,
Cummins Engine Company,



Paragon Reverse Gear—used on 31 makes of engines

Fairbanks-Morse & Company,
Fay & Bowen Engine Company,
Frisbie Motor Company,
Fulton Manufacturing Company,
J. S. Gaffga & Company,
Hall-Scott Motor Car Company,
Kermath Manufacturing Company,
Knox Motors Associates,
J. W. Lathrop Company,
Mianus Motor Works,
Miller Engine Company,
Missouri Engine Company,
Murray & Tregurtha Company,
New London Ship & Engine Co.
Red Wing Motor Company,
Regal Gasoline Company,
Remington Oil Engine Company,
Scripps Motor Company,
The Standard Company,
Treiber Products Company,
Universal Products Company,
Van Blerck Motor Company,
Vim Motor Company,
Wisconsin Motor Manufacturing Company,
Wright Engine Company.

Palmer Engines at the Show

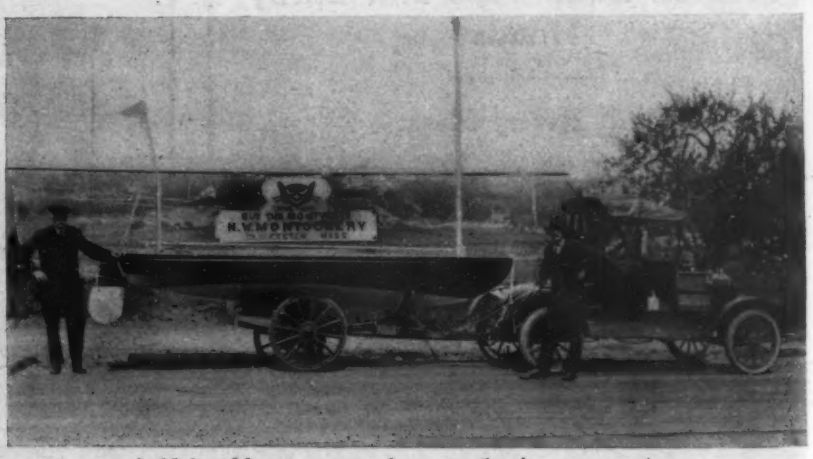
The Palmer Brothers Engines, Inc., will have at the show a special line of their marine motors, from the smallest to the largest sizes, that is, from 2 H. P. to 80 H. P. These engines have made a name for themselves since the internal combustion engine was first put on the market for marine uses, and are known as sturdy, well-designed, dependable motors built of good materials and selling at a reasonable price. They are used largely on commercial boats as well as on yachts and power boats, and the exhibit is one of the largest and most complete in the engine line at the show. A new model recently added to the line is also exhibited.

The company also announces that they have opened a branch office in Jacksonville, Fla., 122 South Ocean street.

A 15-Footer on a Long Traverse

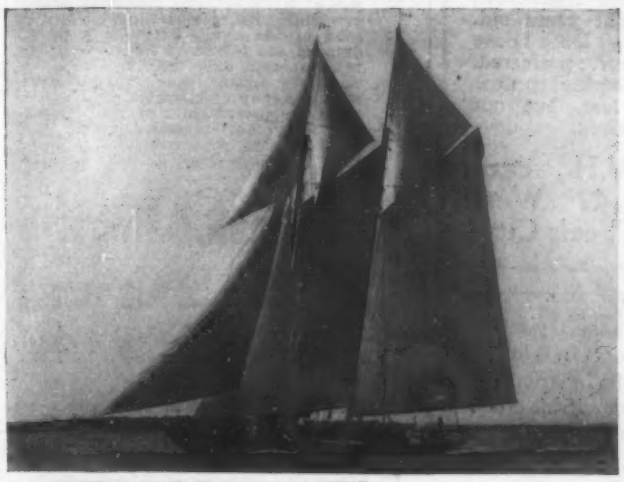
Transporting a 15-foot sail boat by a trailer hitched to a Ford car is rather an unusual proceeding, but that it can be done is shown by the accompanying picture of a 15-foot Montycat with 6 feet 6 inches beam, built by N. W. Montgomery of Gloucester, Mass., a builder who specializes in this particular model. On this trailer this boat was sent from Gloucester to Portland, Me., and back to Kennebunkport, where she was in commission from the middle of May until the first of October, being sailed hard in all kinds of weather, and was often out when other boats of the club kept to the shelter of the river.

During the season she was sailed by the younger members of the yacht club. At no time did she cause her crew any uneasiness. After October her owner, Capt. B. C. Montgomery, sailed the little boat along the coast, demonstrating her sailing ability.

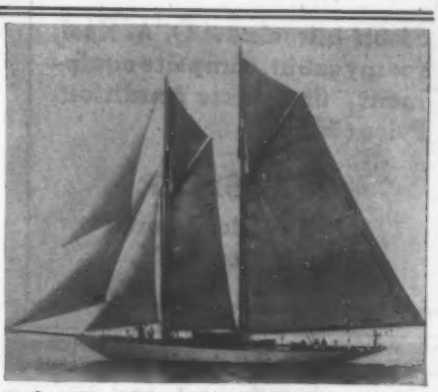


A 15-foot Montycat mounted on a trailer for transportation

YACHT BROKER **JOHN G. ALDEN** NAVAL ARCHITECT
148 STATE STREET, BOSTON, MASS.

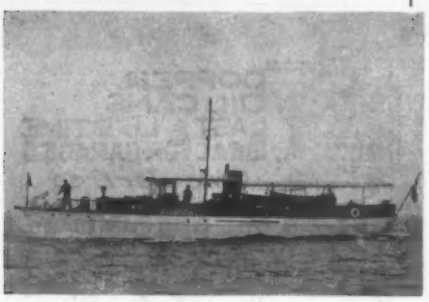


NO. 1037—FOR SALE—Auxiliary schooner 93 ft. x 64 ft. x 19 ft. 6 ins. x 10 ft. 6 ins. Beautifully furnished. In A-1 condition. Apply John G. Alden, 148 State St., Boston.



NO. 776—FOR SALE—LAWLEY auxiliary schooner, 90' x 60' x 18' x 11'. In best condition; 2 single, 1 double s.r. Apply John G. Alden.

NO. 73—FOR SALE—Crack Alden designed R boat. Winner many Championships. Designer considers, if given Marconi rig, as fast as any on Great Lakes. Apply to John G. Alden, 148 State St., Boston.



NO. 2021—FOR SALE OR SUMMER CHARTER—73 ft. x 13 ft. x 4 ft. 6 ins., power cruiser. Two double staterooms, saloon. Sterling engine, speed 10 knots. Apply John G. Alden, 148 State St., Boston.

NO. 139.—Yachtsmen who are true sailors do not want a boat that is only able and cannot sail except in a gale of wind. The above cut illustrates a most desirable type of moderate draft boat. This Alden designed keel and centerboard yawl, 47 ft. x 30 ft. 6 ins. x 5 ft. 2 ins., built last year, is not only ABLE, but also is an exceptionally SMART SAILER, and comfortable below decks. This is only one of many of the Alden designed cruising schooners and yawls which combine all the desirable qualities of a seagoing boat. It is not yet too late to build a boat for use next Summer.

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Staunch, Seagoing, Triple Screw Motorboats of U. S. Navy

Length, 110 ft.; Extreme Breadth, 15 ft. 4¾ in.; Draft, 6 ft. 3 in.

WOOD HULL, STEAM BENT TIMBERS, YELLOW PINE PLANKING, SIX STEEL BULKHEADS
CAN BE OPERATED WITH ONE, TWO OR THREE ENGINES

Equipped with Three Six-Cylinder, Standard Gasoline Engines, 220 H.P. each, reversible, air starting, also 4½ K.W. Electric Set. Speed 18 knots, make first-class Yachts, Fishing Boats, Trap Tenders or Carriers Pleasure or for Commercial Purposes

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Sloop Miracle 26′ O. A. Keel, roomy cabin, complete equipment, first class condition. Price $500.00.

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WANTED:

Power Cruiser in perfect condition, 60 to 75 ft., with generous beam, not over eight years old. Speed, 10 to 13 miles. Deck house and electric starter preferred. Must have bath, Engine control from wheel, and last, but not least, reasonably Priced.

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Wanted to purchase at a low price for cash a flush deck modern keel auxiliary schooner yacht from 62 ft. to 69 ft. long, approximately 15 ft. beam, not over 8 ft. 6 in. draft, moderate sail area, one designed to handle with a small crew. Must be in strictly first class condition and built by some reputable builder. Vessel intended for outside cruising. Give location where vessel can be inspected and detailed description and lowest price. Box "C," YACHTING, 47 West 47th Street, New York City.

Engine Bargains—in Sterlings—Doman—Kermath—Erd—and others; also second hand rebuilt MOTORS and Sail Boats. Send for list.

EVERETT HUNTER BOAT CO.,
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Cabin Cruising yawl, length O. A. 30 ft., W. L. 23, Beam 9, Draft 4′ 6″, Galley, W. C., Built 1914. Very comfortable sea boat. Wilson & Silsby sails 1918. Low price. Address, L. G. N., 302 Mutual Life Bldg., Buffalo, N. Y.

BEST OFFER—Fast cruising yawl, 36′ O. A., 11′ beam, 3½′ draft, 7 H. P. Vulcan engine, full headroom, electric lights, sails new last season, accommodates four, fully equipped, galley, lavatory and main cabin. Write or phone

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Tel., Bensonhurst 4100.

WANTED—Sloop or yawl, 30 or 35 ft., modern boat, cruising accommodations four persons. Auxiliary preferred.

E. C. SWAN
342 Capitol Ave. Hartford, Conn.

Wanted shoal draft cruising yawl or sloop 35′ to 40′ O.A. Preferably without power. Cash.

Box 253, YACHTING,
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FLOAT FOR SALE

Large one-pontoon float, twenty by twenty-five feet, Freeboard fourteen inches, strongly built. For sale reasonable.

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COPPER OIL CANS LAST A LIFE TIME IDEAL FOR GARAGES
Circular Free
STANDARD METAL WORKS
6 BEACH ST. BOSTON, MASS.

Compounding of the Diesel Engine

(*Continued from page* 64)

the trunk piston below the low-pressure piston proper delivers its air to a small receiver, which in turn discharges to the cored port *A* surrounding the induction sleeve *I* The little balancing cylinder B sustains a permanent connection with the low-pressure cylinder. The solid-fuel injection valve and nozzle *N* are placed approximately over the center of gravity of the large masses of air in the clearance dome *D*.

The comparison with the large dome constituting the clearance and combustion space in this compound with the small distance between the solid horizontal line at the base of the combustion space in Fig. 2 and the dotted line indicating the combustion space *C* in the normal Diesel, is simple to make and is most significant.

It is understood that the two high-pressure cylinders are operating four-cycle, one 360 deg. back of the other, discharging alternately into the low-pressure, which therefore works two-cycle and delivers power on each down stroke. The cycle has been pointed out and the general operation will be apparent from this figure.

"The Gray Master"

A super-wolf! Unusually large, uncanny in its intelligence, keen, alert, powerful. He roamed the wild at the head of his small, but mighty pack, dreaded and feared by the community, but respected nevertheless. Why did The Gray Master, who could kill deer with one snap of his mighty jaws, not harm the pretty child of the village? The Gray Master trailed her to her very doorstep, a protector, as it were. How did The Gray Master come to grief?

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who is recognized as one of the foremost writers of animal stories today, tells a thrilling tale about The Gray Master.

It is but one of many short stories contained in a new volume of eight books. Chuck full of tales of the wild, stories that make the animals like intelligent human beings.

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The Duel On The Trail
Lone Wolf
Last Bull
Black Swamp
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Mothers of The North
The Black Imps of Pine-Top
The Baby and the Bear
From Buck to Bear and Back

And these are only a few of the ninety-eight short stories in these eight volumes, which are now available.

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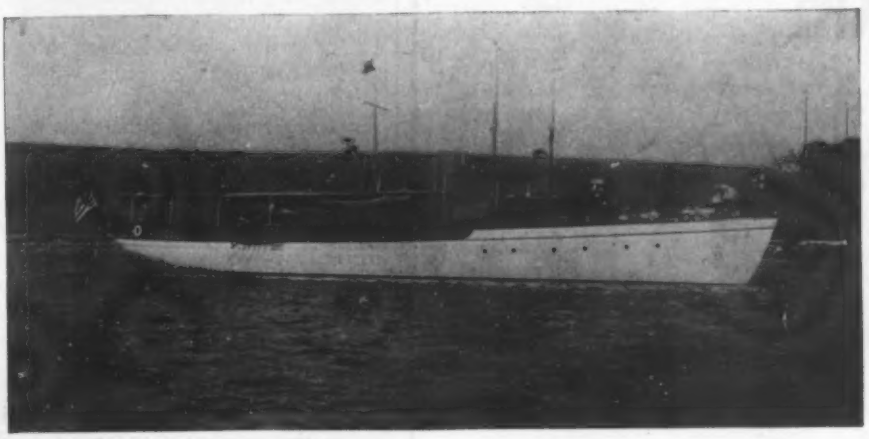
If you want to sell your boat, advertise her in Special March For-Sale number of *Yachting*



This size space including cost of cut and 100 words $20

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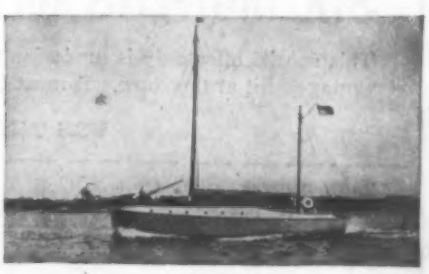
This size space including cost of cut and 50 words $10

This size space including cost of cut and 50 words $12



This size space including cost of cut and 50 words $7

The above is a sample of a *Yachting* page showing the cost of the various sized advertisements. Make your reservation early and send the *best* photograph you have of your yacht. Every sign points to an unusually good market for yachts this year. Take advantage of it.

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The Best Magazine in America for the Pleasure-Craft Sailor

Sailing and Motorboating

YOU will like my accounts of races.
YOU will like my descriptions and pictures of new yachts and motorboats.
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YOU will like my model yacht department.
YOU will like my issues which are as interesting as this one.
YOU will like my editorials.
YOU will like my technical, semi-technical and non-technical yachting gossip.
YOU WILL WANT ME.

THIS IS THE MOTOR BOAT SHOW NUMBER

At the Motor Boat Show in New York City we are making a special introductory offer.

We realize there are many persons who are unable to get to the show and so we make the same offer herewith.

SIX MONTHS for - - - - $1

This special offer only is made for the benefit of those unable to take advantage of it at the show. **It must be accepted before March 5th.**

USE THE COUPON

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New Subscriber ☐
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Gentlemen:
I want to ship with YACHTING on the Motor Boat Show offer.

SIX MONTHS for - - - - - - $1

Present subscribers may extend their subscriptions six months by sending a dollar.

If you are a subscriber now and want to extend your subscription six months use this coupon also.

Enclosed find my dollar.

NAME .....

ADDRESS .....

CITY AND STATE .....

(PIN THIS COUPON TO YOUR REMITTANCE)

A South Sea Voyage

(*Continued from page 61*)

vas flopped and slatted in a nerve-racking fashion. It was, however, our last spell of this trouble, for toward the end of the next day, after forty-eight hours of gradually strengthening breeze, we arrived fairly in the midst of the Southeast trade—the genuine article this time—and gladly shut off our engines, not to call on them until two weeks later when we arrived among the islands.

The following days were beautiful beyond all description. The unbroken weeks of perfect sailing weather so common in the South Seas are almost unbelievable to anyone who has never sailed in the trade winds. For thousands of miles along a zone parallel with the Equator the breeze blows steadily from the southeast, varying somewhat in strength, but never to any great degree in direction. As in the northeast trade of the North Atlantic the sky, of an intense blue, is dappled with fleecy clouds, dazzlingly white in the sunlight and forming a splendid contrast to their brilliant background. This overhead contrast of dazzling white against vivid blue is rivalled only by a like contrast in the ocean, where the whitest whitecaps in the world are scattered over a vast rolling surface whose blue is as deep as it is bright. The picture is completed by never-ending schools of flying-fish sailing joyfully away from the bows on each side of the ship, their wet bodies glistening cleanly in the sun.

During the next weeks, before we reached Disappointment Island, the trade wind performed a balanced crescendo and diminuendo: for nearly a week the breeze gained in strength, finally striking a fortissimo for two days, when, driven by wind alone, we made 180 miles a day and then suffered a steady decline, until one day we scarcely did a hundred. The last twenty-four hours before sighting land we made a feeble effort at a comeback, like a tired horse within scent of the stable, and managed to make a little better day's run.

It was during this week of steadily moderating breeze, I think, that we all began to feel a little bit fed up with sailing. It would be hard to find two people more enthusiastic about the ocean than my companion and I, and yet four weeks without sight of land or sail was as long as we could go without beginning to think wistfully of our destination. I doubt if there is a man alive who can see nothing but ocean for very long, even if it be the pleasantest

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Full and Semi-Enamel Yacht White

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Advice and consultation free on all painting and repair work.

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POWER BOATS, YACHT TENDERS, SMALL SAIL BOATS OF ALL KINDS, SKIFFS, ETC.
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AND FLAGS
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built by
PIGEON HOLLOW SPAR CO.
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WILSON & SILSBY, Inc.
SAIL MAKERS
ROWE'S WHARF
BOSTON, MASS.

ocean in the world. without getting a hankering for his natural element. At any rate, the first island to appear after thirty-two days of unbroken horizon certainly looked good to us; and the others on board, for whom life on a sailing vessel held none of the novelty that it did for us, were frankly tired of the voyage. To them the only novelty connected with it lay in its unusual length, and several of them registered strong disapproval of this, to be completely forgotten after the first few hours in Tahiti when they had been on shore long enough to look back at the trip as a whole and appreciate its pleasantness.

On the evening of the thirty-first day the captain calculated that we were very close to Disappointment Island; but as he was not quite sure of the accuracy of his chronometer he decided to lay-to during the night and make a run for it in daylight. Consequently, as soon as the brief excuse for twilight had died away, he pointed her up into the wind and ordered all canvas taken in except the mainsail. During this process a squall loomed up on the southern horizon, painting the already darkening sky an inky black. It held off until the crew got in the topsails, jibs and foresail, but hit us before they started on the spanker, enveloping us in pitch darkness. For a few minutes the wind howled savagely while a drenching rain soaked the decks, making them like glare ice. At the same time the sea, in whose trough we were now wallowing, began to toss us around as breakers do a piece of driftwood and it was the hardest kind of work for us to keep our feet at all. Under these conditions the crew attacked the spanker, and just as the squall reached its height the sail started down. It had dropped only a few feet when the gaff caught in some way, and there it hung, a short distance below the masthead, the squall in the meantime roaring through the slack canvas, flapping it like mad. The captain darted down the hatchway and reappeared in a moment with a powerful electric flash-light which cut the thick night like a knife and by its rays the trouble was found and remedied and the gaff slid safely down. A few moments later the squall passed and we lay to quietly the remainder of the night.

Cousens & Pratt
Sail Makers
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Ever-Warm Safety Suit

essential equipment of every ship afloat—U. S. Navy uses the Ever-Warm—S. S. Companies recommend it—the only life-saving device that has made good—Ask for booklet "30."

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Let us tell you about it.
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The Thompson Automatic Feathering Propeller

is the only satisfactory wheel for an auxiliary. It reduces drag to a minimum, and sets at absolute neutral when boat is under sail.

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At daylight we set sail and started our engines again after their long rest. Throughout the morning all hands kept an anxious eye out for land. A little before noon a sailor up in the crosstrees sang out "Land ho!" and pointed to the South. The captain made a hastly ascent, and after some minutes decided that it was surely Disappointment Island; as a matter of fact, to an untrained eye it looked like nothing but the faintest haze on the horizon and we passed it without its being at any time visible from deck. An hour later, when we were considerably nearer it, I could just make it out from aloft; but if I had not been told in which direction it lay I should never have known I was looking at land. Joe, who first spotted it miles away, had already been admitted by all hands to have the best pair of eyes aboard.

At two o'clock in the afternoon of the day we passed Disappointment we had a real treat when we drew abreast of a small island not five miles on our port beam, which had all the appearance of a miniature paradise. It was the laziest-looking little bit of land imaginable, with its long white beach, breakers showing plainly in front, and a thick green forest behind. At no point did it rise to any height above sea-level and we could see no signs of people or dwellings, although the island was charted as inhabited.

The next day we saw no land and sailed all day without motors; but on the following morning we passed another island, larger but of the same general appearance as the last, and in the afternoon we sailed close between two more, the southernmost of which must have been several miles long. These were all coral atolls and belong to the large group east of the Society Islands, known locally as the Paumotus, but designated on charts as the Tuamotu Archipelago or simply the Low and Dangerous Archipelago. We had another day without seeing any islands, and finally, on the afternoon of the 35th day, in an almost dead calm, we started our engines, to run them this time until we were inside of Papeete Harbor. So again, on our last night on board, our sleep was lulled by their humming.

In the morning I was awakened by one of the men as soon as it was daylight to see Tahiti, a distant mass, looming tall over our port bow. At the same time, not far off on our starboard quarter, I caught sight of the first ship we had seen since leaving the Gulf of Panama—a small French cruiser slipping along at a good speed and look-

WILLIAM H. HAND, Jr.
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SEND STAMP FOR CATALOG ILLUSTRATING FORTY-THREE TYPICAL HAND-V-BOTTOM DESIGNS

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Naval Architect and Yacht Builder
LAYING UP AND REPAIR WORK

ing businesslike enough in her battleship gray. The men on watch said she was just visible behind us at dawn and within an hour she had disappeared again ahead.

We were now drawing close to the capital of French Polynesia ourselves and soon began to distinguish things plainly on the island. It was high—some 8,000 feet at the highest point—but not tremendously rugged in appearance from the ocean. Papeete is on the northwest coast of Tahiti and, coming as we did, we skirted the whole northern shore, getting a fine view of this portion of the island. The shore line, thick with trees and vegetation, does not extend very far back; but on the other hand the mountains appear to rise up rather gradually. The first ridge, plainly visible from the sea, is dotted with foliage and in comparison with such places as the Balkan coast, or that of Venezuela, which we had recently visited, the whole island presents a very mild countenance up to the point where it is hidden in the clouds. As we proceeded along the coast houses began to peep out from the heavy bush fringing the shore line —thatched huts, clustered generally in little groups, and now and then an imposing mansion, the residence of some wealthy land-owner. The island wireless station, plainly distinguished because of its high towers, was soon followed by a big white lighthouse; and then, as we neared Papeete, the denser foliage began to give way to patches of cultivated land. Finally the harbor itself appeared, two long coral reefs marked by two white lines of surf with a narrow pass between. We had taken in all sails while skirting the coast and we now stopped our motors outside the reefs, lying to until an open motor boat approached us with a pilot. We started the engines again and entered the harbor under bare poles. Between the two coral reefs we chugged, the breakers foaming close on either side, and past a little green islet in the center of the harbor. Finally, when alongside the cruiser that had passed us three or four hours before, and separated only by a flotilla of little trading schooners from the strange, peaceful, unreal, but inviting-looking quay, we dropped anchor, 36 days after waving farewell to Colon.

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